Index

IEE Proceedings

Vol. 132, 1985

ABBREVIATIONS

- p paper, address or lecture
- d discussion on a paper
- a abstract of paper or address
- e errata
- s synopsis of a paper published in full in another Part of the IEE Proceesings

Author index

A

Abdallah, E.A.F., and El-Deeb, N.A. Fast, accurate computational method for asymmetric coupled microstrip parameters **H** p69

Abdul-Karim, M.A.H., and Al-Samarraie, A.M.A.H. see Al-Samarraie, A.M.A.H.

Abo-Taleb, A., and Mouftah, H.T. Modified two-moment approach for constant-service tandem queues **E** p170

Abram, R.A., Taylor, R.I., Burt, M.G., and Smith, C. see Taylor, R.I.

Abuelma'atti, M.T. Intermodulation owing to quantisation of two-carrier-level SCPC system **G** p68

Abur, A., and Keyhani, A. see Keyhani, A.

Acha, J.I., and Calvo, J. On the implementation of sequential circuits with PLA modules **E** p246

Adams, M.J. Time dependent analysis of active and passive optical bistability in semiconductors **J** p343

Adams, M.J., Collins, J.V., and Henning, I.D. Analysis of semiconductor laser optical amplifiers **J** p58

Adams, M.J., and Henning, I.D. Linewidth calculations for distributed-feedback lasers **J** p136

Adams, M.J., and Osiński, M. see Osiński, M.

Adeniran, S.A. New techniques for absolute temperature compensation of tunable resonant cavities **H** p471

Agatholklis, P., and Hamza, M.H. Recursive fixed-memory filter **G** p119

Ah Fock, A.L.D., and Bonwick, W.J. see Bonwick, W.J.

Ahmadi, M., Ramachandran, V., and Gargour, C.S. see Ramachandran, V.

Ahmed, M.S. Computationally efficient IV algorithm for structure and parameter identification of linear systems **D** p37

Akazaki, M., Hara, M., Yashima, M., and Tsutsumi, T. see Hara, M.

Al-Chalabi, S.A., Culshaw, B., Davies, D.E.N., Giles, I.P., and Uttam, D. Multiplexed optical fibre interferometers: an analysis based on radar systems **J** p150

Al-Habib, A.M.H., and Deeley, E.M. see Deeley, E.M.

Al-Khalidi, K.M.S., and Williamson, A.C. see Williamson, A.C.

Al-Nuaimi, M.O. Reduction of threshold noise in FM receivers operating in quasisynchronous field **F** p94

Al-Rawas, L.A.A., and Ormondroyd, R.F. see Ormondroyd, R.F.

Al-Samarraie, A.M.A.H., and Abdul-Karim, M.A.H. Digital correlator using delta-sigma modulation **G** p14

Al-Subbagh, M.N., and Jones, E.V. see Jones, E.V.

Aleksander, I., and Dobree Wilson, M.J. Adaptive windows for image processing **E** p233

Alhelwani, A.M., and Lister, P.F. see Lister, P.F.

Allan, J., Mellitt, B., and Wu, W.Y. A gate-turn-off thyristor chopper for traction drives **B** p245

Allan, R.N., Leite da Silva, A.M., Soares, S.M., and Arienti, V.L. see Leite da Silva, A.M.

Allan, R.N., and Corredor Avella, P. Reliability and economic assessment of generating systems containing wind energy sources **C** p8

Allen, P.H.G. Some aspects of transformer core loss **A** p113

Aly, M.S., and Mahmoud, S.F. Propagation and radiation behaviour of a longitudinally slotted horn with dielectric-filled slots **H** p477

Amaratunga, G.A.J., Sabine, K.A., and Evans, A.G.R. see Sabine, K.A.

Ambrosino, G., Celentano, G., and Garofalo, F. Adaptive model following control of plants with nonlinearities of known form **D** p11

Amin, R.M., Jasmon, G.B., and Chuan, C.Y. see Jasmon, G.B.

Analouei, A.R., Walton, A.J., and Burrow, N.G. Deterministic strategy for trimming thick-film distributed *RC* lowpass active filters **G** p7

Anastassopoulos, V., Kouvaras, N., and Deliyannis, T. Method for designing half-band delta-modulation FIR filters **F** p13

Anderson, A.F. William Henley, pioneer electrical instrument maker and cable manufacturer, 1813 to 1882 (Lecture) **A** p249

Anderson, A.P., and Sali, S. New possibilities for phaseless microwave diagnostics. Part 1: Error reduction techniques **H** p291

Anderson, B.D.O., and Parks, P.C. Lumped approximation of distributed systems and controllability questions **D** p89

Anderson, D. Nonlinear pulse propagation in optical fibres: a variational approach **J** p122

Anderson, R.B. Lightning performance criteria for electric power systems **C** p298

Andersson, D. Current instability and chopping with arcs in series **C** p224

Antoine, P., Dimoff, K., and Vijh, A.K. see Dimoff, K.

Appleby, D.G., and Sabbagh, I. see Sabbagh, I.

Appleby, M.S., and Hughes, C.J. see Hughes, C.J.

Apsley, N., Backhouse, P., and Smart, A. see Backhouse, P.

Arambepola, S.L., and Cozens, J.R. HE_{11}-mode propagation in the cylindrical hollow Bragg fibre **J** p207

Aravena, J.L., and Porter, W.A. see Porter, W.A.

Arazi, B., and Hsieh, J. see Hsieh, J.

Archer, M.J. Probability of direction indications for two unresolved signals **F** p90

Arienti, V.L., Leite da Silva, A.M., Allan, R.N., and Soares, S.M. see Leite da Silva, A.M.

Arndt, F., and Christ, U. see Christ, U.

Arnold, J.M., Belghoraf, A., and Dendane, A. Intrinsic mode theory of tapered optical waveguides **J** p314

Arnold, J.S. Trends in the application of semiconductor technology **E/I** p50

Asbury, A.J., Linkens, D.A., and Menad, M. see Linkens, D.A.

Ashburn, P., and Jesshope, C.R. see Jesshope, C.R.

Ashpole, R.S., Lewis, D.L., Powell, R.J.W., and Hinchliffe, J.D.S. Hydrogen in optical cables **J** p162

Atkinson, C.J. Power devices in gallium arsenide **I** p264

Au, S., Santiago, J., and Smy, P.R. Analysis of the arc formed along the surface of a flat plate immersed in a laminar flow of gas **A** e263

Avery, C.R., and Crawshaw, G. Remote control of traction power over two wires **B** e60

Awano, Y., Tomizawa, K., Hashizume, N., and Kawashima, M. see Tomizawa, K.

B

Backhouse, P., Apsley, N., and Smart, A. Measurement of dielectric loss in thin parallel-sided samples using an untuned cavity **A** p280

Bada, A.T. Design of delayed control systems using Zakian's framework **D** p251

Baets, R., and Buus, J. Comparison of a beam propagation model for laser diodes with other modelling techniques **J** p205

Baher, H. Analytic design of constant delay switched-capacitor filters with amplitude selectivity **G** p281

Baher, H. Design of finite-duration impulse response digital and charge-coupled device filters with arbitrary attenuation characteristics **G** p193 **G** e302

Baher, H. Design of finite-duration impulse/response digital and charge-coupled device filters with arbitrary attenuation characteristics **G** p103

Baier, A., Baier, P.W., and Pandit, M. Spread-spectrum waveforms simplifying transform domain signal processing **F** p558

Baier, P.W., Baier, A., and Pandit, M. see Baier, A.

Bain, W.C. Wave-hop method of calculating propagation at LF and VLF, and stationary phase **H** p138

Baines, G.D., Chalmers, B.J., and Hamed, S.A. see Chalmers, B.J.

Bajwa, A.S. UHF wideband statistical model and simulation of mobile radio multipath propagation effects **F** p327

Bajwa, A.S., and Parsons, J.D. Large area characterisation of urban UHF multipath propagation and its relevance to the performance bounds of mobile radio systems **F** p99

Baker, J.E., Vitols, R., Murphy, B.J.M., Wray, G.R., and King, T.G. see Vitols, R.

Baker, J.W. When the engineering has to stop **A** p193

Baker, W.C. ESM systems applications **F** p206

Balachandran, K. Global and local controllability of nonlinear systems **D** p14

Balakrishnan, N., and Bokhari, S.A. see Bokhari, S.A.

Balda, J.C., and Harley, R.G. see Harley, R.G.

Balmer, L., and Douce, J.L. see Douce, J.L.

Baltes, H.P., Turner, R.F.B., Voss, W.A.G., and Tinga, W.R. see Turner, R.F.B.

Barber, W.L., Brown, E.R., and Beasley, K. see Brown, E.R.

Barclay, L.W., Wong, N.F., and Gott, G.F. see Wong, N.F.

Bargiela, A. An algorithm for observability determination in water-system state estimation **D** p245

Baribaud, M., Dubois, F., Floyrac, R., and Wang, S. Tomographic image reconstitution of objects from multi-incidence microwave exploration **H** p286

Barlow, K., Kiermasz, A., and Eccleston, W. An improved theory for the plasma anodisation of silicon **I** p181

Barnes, J.P., and Huang, E. see Huang, E.

Barnes, S.R., Riley, S.P., and Wolfe, S.V. Hydrogen evolution from silicone resins for primary coating applications **J** p169

Barnett, J.A., Pitt, G.D., Extance, P., Neat, R.C., Batchelder, D.N., Jones, R.E., and Pratt, R.H. see Pitt, G.D.

Barros, M.deP., and Lind, L.F. On the realisation of asymmetric transmission zeros for crystal filter design **G** p217

Bassett, R.J. Editorial: Power semiconductor devices **I** p237

Batchelder, D.N., Pitt, G.D., Extance, P., Neat, R.C., Jones, R.E., Barnett, J.A., and Pratt, R.H. see Pitt, G.D.

Bateman, A.J., and McGeehan, J.P. see McGeehan, J.P.

Bateman, A.J., and McGeehan, J.P. Coherent demodulation of pilot tone single sideband with phase-locked TTIB/FFSR processing **F** p363

Bates, G.A., and Bradwell, A. see Bradwell, A.

Bates, R.H.T., Minard, R.A., and Robinson, B.S. see Minard, R.A.

Bates, R.H.T., Yeo, T.S., and Wall, D.J.N. Towards an algorithm for dielectric-edge diffraction coefficients **H** p461

Bates, R.H.T., and Seagar, A.D. see Seagar, A.D.

Batey, J., Petty, M.C., and Roberts, G.G. see Petty, M.C.

Baylis, P.E., Brush, R.J.H., and Tawel, N. see Brush, R.J.H.

Bazhenov, V.Yu., Bogatov, A.P., Eliseev, P.G., Okhotnikov, O.G., Pak, G.T., Rakhvalsky, M.P., Soskin, M.S., Taranenko, V.B., and Khairetdinov, K.A. 35 mW CW single-frequency injection laser with an external dispersive cavity **J** p9

Beasley, K., Brown, E.R., and Barber, W.L. see Brown, E.R.

Bedair, S.S. Characteristics of asymmetrical coupled shielded microstrip lines **H** p342

Beeckman, P.A. Analysis of phase errors in antenna-measurements applications to phase-pattern corrections and phase-centre determination **H** p391

Beesley, C., and Rokos, H. Parasitic insensitive GIC **G** p301

Begg, M.C., and Williamson, S. see Williamson, S.

Belahrache, D., and Murgatroyd, P.N. see Murgatroyd, P.N.

Belghoraf, A., Arnold, J.M., and Dendane, A. see Arnold, J.M.

Bellaouar, A., Sarrabayrouse, G., and Rossel, P. Influence of ionising irradiation on the channel mobility of MOS transistors **I** p184

Benjamin, J., Yilmaz, H., Chen, L.-S., Van Dell, W.R., Chang, M., and Owyang, K. see Yilmaz, H.

Bennett, J.C., and Yamani, A. see Yamani, A.

Bennetts, R.G., and Jack, M.A. Design for testability (Editorial) **G** p73

Benoit, J., Leclerc, D., Brosson, P., and Fernier, B. see Leclerc, D.

Betts, P.J. Nickel and chromium plated terminals in current transformer circuits **A** p178

Beyer, A., and Wolff, I. Design of a millimetre-wave ferrite isolator at 28.5 GHz **H** p244

Bhadra, S.N. A note on some computational aspects of the jump-resonance problem in 3-phase systems **C** p248

Bhadra, S.N., and Rashid, M.H. see Rashid, M.H.

Bharath Kumar, K. Small signal bias dependent model for high frequency transistors I p201
Bhat, K.N., Ramamurthy, V., and Kakati, D. see Ramamurthy, V.
Bhattacharya, B., and Pal, A. see Pal, A.
Bhattacharya, B.B., Gupta, B., Sarkar, S., and Choudhury, A.K. Testable design of RMC networks with universal tests for detecting stuck-at and bridging faults E p155
Bhattacharyya, A.K., and Garg, R. Generalised transmission line model for microstrip patches H p93
Bhattacharyya, B.B., and Tavakoli Darkani, M. see Tavakoli Darkani, M.
Bhatti, G.S., Jones, B.K., and Russell, P.C. A Model for MOS transistors I p248
Billam, E.R. Eclipsing effects with high-duty-factor waveforms in long-range radar F p598
Blandford, S., and Hope, R.P. Systematic methods for the problem solving process with particular reference to design A p199
Board, K., and Darwish, M. LDMOS transistors with implanted and deposited surface layers I p177
Boeck, G., and John, W. see John, W.
Bogatov, A.P., Bazhenov, V.Yu., Eliseev, P.G., Okhotnikov, O.G., Pak, G.T., Rakhvalsky, M.P., Soskin, M.S., Taranenko, V.B., and Khairetdinov, K.A. see Bazhenov, V.Yu.
Bogner, R.E., and Davis, B.R. see Davis, B.R.
Bohley, E.P., and DeVore, R.V. see DeVore, R.V.
Bokhari, S.A., and Balakrishnan, N. A spectral iteration technique for the analysis of Yagi-Uda arrays H p198
Bolton, G.V.R. VLSI: the design problem E/I p86
Bolton, M.J.P. Designing with programmable logic E/I p73
Bompa, L., Mahdavi, J., Schaeffer, A., Velo, C., and Gatellet, J. see Mahdavi, J.
Bonnaud, O., and Viktorovitch, P. Modelling of a new high current gain bipolar transistor with n-doped hydrogenated silicon emitter I p17
Bonvin, D. On the selection of states to be retained in a reduced-order model D d86
Bonwick, W.J., and Ah Fock, A.L.D. Synchronous machines with contrarotating armatures: steady-state behaviour B p195
Borel, D., El-Hennawy, A., and Saleh, N. see El-Hennawy, A.
Bornemann, J. Rigorous field theory analysis of quasiplanar waveguides H p1
Bottorff, P.S., Williams, T.W., Walther, R.G., and Das Gupta, S. see Williams, T.W.
Boucouvalas, A.C., and Georgiou, G. see Georgiou, G.
Bouthinen, M., Razban, T., and Coumes, A. see Razban, T.
Bowden of Chesterfield, Lord The story of IFF (identification friend or foe) A p435
Bowers, B. The first century of the Wiring Regulations A p498
Bowes, S.R., and Davies, T. Microprocessor-based development system for PWM variable-speed drives B p18
Bowes, S.R., and Midoun, A.H. Suboptimal switching strategies for microprocessor-controlled PWM inverter drives B p133 B d344
Bowman, R. Channelised integrating ESM receivers using a Bragg cell F p275
Boyd, I., Gupta, D.P.Sen, Narahari, N.G., and Hogg, B.W. see Gupta, D.P.Sen
Boys, J.T., Elder, J.M., and Woodward, J.L. see Elder, J.M.
Boys, J.T., and Walton, S.J. A loss minimised sinusoidal PWM inverter B p260
Bradley, D.A., Morfee, P.J., and Wilson, L.A. The New Zealand harmonic legislation B p177
Bradley, D.J., McInerney, J., and Reekie, L. see McInerney, J.
Bradley, P.A., and Liu, R.Y. see Liu, R.Y.
Bradwell, A., and Bates, G.A. Analysis of dielectric measurements on switchgear bushings in British Rail 25 kV electrification switching stations B p1
Bredenkamp, G.L., and van Rhyn, P. The design of welder power supplies incorporating self-oscillating high-frequency transformer inverters B p202
Brewster, R.L., and Haidar, I. see Haidar, I.
Briggs, B.F.N. By CNAA degrees A p184
Bristow, J.P.G., Laybourn, P.J., McDonach, A., and Nutt, A.C.G. Locating and coupling fibres to integrated stripe waveguides J p291
Brooke, R.C.R. Distribution diary A p533
Brooks, J.L., Youngquist, R.C., Risk, W.P., Kino, G.S., and Shaw, H.J. see Youngquist, R.C.
Brosson, P., Leclerc, D., Fernier, B., and Benoit, J. see Leclerc, D.
Brothers, J.S., Tomkins, J.W., and Williams, J.S. The Megacell concept: an approach to painless custom design E/I p91
Brown, C.N. Charging for electricity in the early years of electricity supply A p513
Brown, E.R., Beasley, K., and Barber, W.L. Thermal impedance testing of high-speed gate arrays G p277
Brucoli, M., Torelli, F., and Trovato, M. A decentralised control strategy for dynamic shunt VAr compensation in interconnected power systems C p229
Brush, R.J.H., Baylis, P.E., and Tawel, N. Doppler method for improving tracking accuracy of satellite receiving stations F p537
Bumby, J.R., Clarke, P.H., and Forster, I. Computer modelling of the automotive energy requirements for internal combustion engine and battery electric-powered vehicles A p265
Burcham, W.E. The development of centimetre AI A p385
Burgess, N., Damper, R.I., Shaw, S.J., and Wilkins, D.R.J. Faults and fault effects in NMOS circuits—impact on design for testability G p82
Burns, R.W. The history of television for public showing in cinemas in the United Kingdom A p553
Burrow, N.G., Analouei, A.R., and Walton, A.J. see Analouei, A.R.
Burt, M.G., Taylor, R.I., Abram, R.A., and Smith, C. see Taylor, R.I.
Burton, D.P. Marketing and sales co-operatives for electronic equipment manufacturers in a developing country: a feasibility study A p321
Butler, B.R., Rosiewicz, A., Park, C.A., Jones, C.J., and Palin, M.G. see Rosiewicz, A.
Butler, B.R., Rosiewicz, A., and Hinton, R.E.P. see Rosiewicz, A.
Butler, C.M., Karunaratne, M.D.G., and Michalski, K.A. see Karunaratne, M.D.G.
Butler, C.M., Michalski, K.A., and Smith, C.E. see Michalski, K.A.
Buus, J. Principles of semiconductor laser modelling J p42
Buus, J., and Baets, R. see Baets, R.

C

Calandra, E.F., and Sommariva, A.M. On the dynamical stability of negative conductance free running oscillators G p143
Callaway, W.J. Relation of supervised work experience to academic study in CNAA first degree courses A p109
Calvo, J., and Acha, J.I. see Acha, J.I.
Campbell, R.H., Koelmans, A.M., and McLauchlan, M.R. STRICT: a design language for strongly typed recursive integrated circuits E/I p108
Campbell, S.L. On using orthogonal functions for the analysis of singular systems D d131
Cantoni, A., and Er, M.H. see Er, M.H.
Cardwell, B.J., and Goodman, C.J. Response improvements in industrial DC drives derived from optimal analysis B p171
Carrus, A. Marx circuit modified by adding a tail sphere gap to generate lightning impulses lasting a few microseconds A p40
Casey, M.T. Nicholas Callan — priest, professor and scientist A p491
Cathey, J.J. Helical motion induction motor B p112
Celentano, G., Ambrosino, G., and Garofalo, F. see Ambrosino, G.
Chakraborti, N.B., and Kal, S. see Kal, S.
Chalmers, B.J., Hamed, S.A., and Baines, G.D. Parameters and performance of a high-field permanent-magnet synchronous B p117
Chalmers, B.J., and Deeley, E.M. see Deeley, E.M.
Chan, F.H.Y., Li, H.F., Poon, P.W.F., Yan, W.F., Wong, W.Y., and Hwang, J.C. see Li, H.F.
Chan, K.K., and Patel, P.D. see Patel, P.D.
Chandra, R.C. Low-complexity functional approach to logic controller design E p8
Chandrashekhar, K.S. Online correction dispatch algorithm for dynamic security C p20
Chang, M., Yilmaz, H., Chen, L.-S., Van Dell, W.R., Benjamin, J., and Owyang, K. see Yilmaz, H.
Chapman, R., Willey, T., Yoho, H., Durrani, T.S., and Preis, D. see Willey, T.
Chappell, P.H., and Davis, R.M. Microprocessor control of a 'hidden-link' convertor drive B p87
Charlton, D.G., Holt, A.R., and Evans, B.G. Effect of common volume models on bistatic scattering and interface calculations H p440
Cheah, J.Y.C., Magdy, M.A., and Paoloni, F.J. see Magdy, M.A.
Chen, Keping, and Eriksson, S. Design of parasitic-insensitive four-phase wave SC filters G p46
Chen, L.-S., Yilmaz, H., Van Dell, W.R., Benjamin, J., Chang, M., and Owyang, K. see Yilmaz, H.
Chignell, R.J. Antenna systems for ESM applications—a land-mobile example F p252
Choudhury, A.K., Bhattacharya, B.B., Gupta, B., and Sarkar, S. see Bhattacharya, B.B.
Christ, U., and Arndt, F. Optimised travelling-wave amplifier with two parallel-gate transmission lines I p140
Chuan, C.Y., Jasmon, G.B., and Amin, R.M. see Jasmon, G.B.
Cichocki, A., and Unbehauen, R. Design of precision switched-capacitor generalised integrators and their applications to the synthesis of nonlinear networks G p225
Ciric, I.R., and Mathur, R.M. Electromagnetic levitation of rotating cylinders A p21
Clark, A.P. Digital modems for land mobile radio F p348
Clark, A.P., and Ser, W. see Ser, W.
Clark, S., Lucas, J., and Parker, A.B. Seam tracker for TIG welding D p164
Clarke, D.W., and Tuffs, P.S. see Tuffs, P.S.
Clarke, J., and Dunsmore, M.R.B. High-power tunable YIG filters H p251
Clarke, P.H., Bumby, J.R., and Forster, I. see Bumby, J.R.
Clarke, R.J. On the dynamic range of coefficients generated in transform processing of digitised image data F p107
Clewer, B.C., Irving, M.R., and Sterling, M.J.H. Robust state estimation in power systems using sparse linear programming C p123
Co, T., and Ydstie, B.E. see Ydstie, B.E.
Cockburn, Sir Robert The radio war A p423
Cockcroft, J.D. Memories of radar research A p327
Collins, J.V., Adams, M.J., and Henning, I.D. see Adams, M.J.
Comer, D.J. A theoretical basis for practical amplifier design using cascaded operational amplifiers G p161
Conlon, M., and Wilcox, D.J. see Wilcox, D.J.
Connelly, T.G., and Griffiths, M.P. Modelling compelled multiprocessor systems E p211
Copeland, P.R., Davies, W.S., Hurren, S.J., and Fall, E.D.S. see Davies, W.S.
Cork, P., and Hill, R.J. see Hill, R.J.
Cornbleet, S. General design of two-reflector antennas H p47
Corredor Avella, P., and Allan, R.N. see Allan, R.N.
Corsini, G., Dalle Mese, E., Marchetti, G., and Verrazzani, L. Design of the SPRT for radar target detection F p139
Corsini, G., Dalle Mese, E., Marchetti, G., and Verrazzani, L. Bearing estimation of radar targets using the SPRT statistic F p133
Cosgrove, B. The UK5000 array G p90
Coumes, A., Razban, T., and Bouthinon, M. see Razban, T.
Courtney, D.F. A brief analysis of the transient forward voltage drop in fast diodes I p277
Cozens, J.R., and Arambepola, S.L. see Arambepola, S.L.
Crawshaw, G., and Avery, C.R. see Avery, C.R.
Culshaw, B. Editorial Gyrosopes and monomode optical components J p249
Culshaw, B., Al-Chalabi, S.A., Davies, D.E.N., Giles, I.P., and Uttam, D. see Al-Chalabi, S.A.
Culshaw, B., and Uttam, D. see Uttam, D.
Cumming, I.G., Sack, M., and Ito, M.R. see Sack, M.

D

D'Addio, E., and Galati, G. Adaptivity and design criteria of a latest-generation MTD processor F p58
Dadds, A.F. Miranda—a mobile ESM laboratory F p280
Dahele, J.S., and Lee, K.F. Theory and experiment on microstrip antennas with airgaps H p455
Dakin, J.P., Wade, C.A., and Haji-Michael, C. Fibre optic serrodyne frequency translator based on a piezoelectrically-strained fibre phase shifter J p287
Dalle Mese, E., Corsini, G., Marchetti, G., and Verrazzani, L. see Corsini, G.
Daly, P. Dual-potential problems in transmission lines with limited or no symmetry H p351
Damper, R.I., Burgess, N., Shaw, S.J., and Wilkins, D.R.J. see Burgess, N.
Danai, B., and Lavers, J.D. see Lavers, J.D.
Daniel, C. Spatial heterodyning of the output signal from an acousto-optic correlator J p101
Daniels, M.W., and Johnson, M.A. see Johnson, M.A.
Darnell, M. Problems of mobile HF communication and techniques for performance improvement F p433
da Rocha, J.R.F., O'Reilly, J.J., and Schumacher, K. see O'Reilly, J.J.
Darwish, M., and Board, K. see Board, K.
Das Gupta, S., Williams, T.W., Walther, R.G., and Bottorff, P.S. see Williams, T.W.
Das, A., and Das, S.K. Input impedance of a probe excited circular microstrip ring antenna H p384
Das, S.K., and Das, A. see Das, A.
David, A.K. Incorporation of large stochastic sources in the power system C p161
David, R., and Silva, M. see Silva, M.
Davidson, H.D., Maras, A.M., and Holt, A.G.J. see Maras, A.M.
Davies, A.E., Uriola Sereno, J.J., and German, D.M. Modelling of saturated reactor compensator for system studies C p307
Davies, D.E.N., Al-Chalabi, S.A., Culshaw, B., Giles, I.P., and Uttam, D. see Al-Chalabi, S.A.
Davies, E.J. Electroheat for industry A p77
Davies, E.R. Radial histograms as an aid in the inspection of circular objects D p158
Davies, J.B., and Rahman, B.M.A. see Rahman, B.M.A.
Davies, J.T., Hayes, A.J., and Eccleston, W. see Hayes, A.J.
Davies, J.T., Walker, P., and Nuttall, K.I. see Walker, P.
Davies, P.J., and Marsh, J.O. Ohm's law and the Schuster effect A p525
Davies, T., and Bowes, S.R. see Bowes, S.R.

Davies, W.S., Hurren, S.J., Fall, E.D.S., and Copeland, P.R. Antenna pattern degradation due to tower guy wires on microwave radio systems H p181
Davis, B.R., and Bogner, R.E. Propagation at 500 MHz for mobile radio F p307
Davis, L.E., and Nicol, A. see Nicol, A.
Davis, R.M., and Chappell, P.H. see Chappell, P.H.
Dawson, G.E., Gieras, J.F., and Eastham, A.R. see Gieras, J.F.
Dayan, P., Robertson, M.J., and Ritchie, S. see Robertson, M.J.
Dean, J.E. Suspended substrate stripline filters for ESM applications F p257
Deb, S., Maitra, K., and Roychoudhuri, A. An accurate and simple technique of determination of the maximum power point and measurement of some solar cell parameters I p157 I e271
de Cogan, D., Howe, A.F., and Webb, P.W. Temperature measurements of thin films on substrates I p143
de Cogan, D., and John, S.A. Computer-aided thermal analysis of reverse-biased PIN diodes I d170.
Deeley, E.M., and Al-Habib, A.M.H. Magnetoresistive transducers for the measurement of magnetic tape speed A p33
Deeley, E.M., and Chalmers, B.J. Surface impedance of saturating iron in travelling fields A p171
de Lima, F.N., and Naidu, S.R. see Naidu, S.R.
Deliyannis, T., Anastassopoulos, V., and Kouvaras, N. see Anastassopoulos, V.
Denbigh, P.L., Jones, B.F., and Mottram, D.A. Variation of efficacy with arc tube bore and current in a high-pressure sodium lamp A p99
Dendane, A., Arnold, J.M., and Belghoraf, A. see Arnold, J.M.
Denyer, P.B., and Murray, A.F. see Murray, A.F.
Denyer, R.T., Taylor, P.D., and Findlay, W.J. see Taylor, P.D.
de Oliveira Duarte, A.M., and O'Reilly, J.J. see O'Reilly, J.J.
de Oliveira Duarte, A.M., and O'Reilly, J.J. Simplified technique for bounding error statistics for DFB receivers F p567
De Pourcq, M. Field and power-density calculations in closed microwave systems by three-dimensional finite differences H p360
DeVore, R.V., and Bohley, E.P. RF power injected into the DC yard by an HVDC convertor pole C p36
Dillon, T.S., Yak, Y.W., and Forward, K.E. see Yak, Y.W.
Dimoff, K., Antoine, P., and Vijh, A.K. Effects of enhanced heating by surface oxides on arc cathodes A p301
Dobree Wilson, M.J., and Aleksander, I. see Aleksander, I.
Douce, J.L., and Balmer, L. Transient effects in spectrum estimation D p25
Drazan, P.J., and Hopkins, S.H. see Hopkins, S.H.
Dubois, F., Baribaud, M., Floyrac, R., and Wang, S. see Baribaud, M.
Dumas, R.H.M., and Laybourn, P.J.R. Computer simulation of holographic grating exposure J p331
Dunford, W.G., and Mirbod, S.A. see Mirbod, S.A.
Dunsmore, M.R.B., and Clarke, J. see Clarke, J.
Durrani, T.S., Willey, T., Chapman, R., Yoho, H., and Preis, D. see Willey, T.

E

Easa, A.K.M., and Marougi, S.D. see Marougi, S.D.
East, P.W. ESM range advantage F p223
East, P.W., and Everett, J.L. Electronic support measures (Editorial) F p205
Eastham, A.R., Gieras, J.F., and Dawson, G.E. see Gieras, J.F.
Eastham, J.F., and Rodger, D. see Rodger, D.
Eccleston, W., Barlow, K., and Kiermasz, A. see Barlow, K.
Eccleston, W., Hayes, A.J., and Davies, J.T. see Hayes, A.J.
Ediss, G.A. Dual-mode horns at millimetre and submillimetre wavelengths H p215
Ediss, G.A., S-J, Wang., and Keen, N.J. Quasioptical components for 230 GHz and 460 GHz H p99
Edwards, J. Sensitivity of crystal video receivers F p233
El-Deeb, N.A., and Abdallah, E.A.F. see Abdallah, E.A.F.
El-Hennawy, A., Borel, D., and Saleh, N. Design and characterisation of a very low current to frequency convertor G p184 G e302
El-Masry, E.I. Synthesis of a follow-the-leader feedback switched-capacitor structure G p18
El-Shobokshy, M.S., Mujahid, A., and Zakzouk, A.K.M. Effects of dust on the performance of concentrator photovoltaic cells I p5
Elangovan, S., and Lim, C.M. see Lim, C.M.
Elder, J.M., Boys, J.T., and Woodward, J.L. Integral cycle control of stand-alone generators C p57
Eliseev, P.G., Bazhenov, V.Yu., Bogatov, A.P., Okhotnikov, O.G., Pak, G.T., Rakhvalsky, M.P., Soskin, M.S., Taranenko, V.B., and Khairetdinov, K.A. see Bazhenov, V.Yu.
Elliot, R.S., Orchard, H.J., and Stern, G.J. see Orchard, H.J.
Elsamahy, A.M., Paul, R.J.A., and Fleming, P.J. see Paul, R.J.A.
Eltoukhy, A.A., and Roulston, D.J. see Roulston, D.J.
Engberg, J. Noise parameters of embedded noisy two-port networks H p17
Er, M.H., and Cantoni, A. An alternative formulation for an optimum beamformer with robustness capability F p447
Eriksson, S., and Chen, Keping see Chen, Keping
Etoh, J., Kimura, K., Itoh, K., Hori, R., and Kawajiri, Y. see Kimura, K.
Euthymiou, P.C., Papaioannou, G.J., Kaliakatsos, J.A., and Forrest, J.R. see Papaioannou, G.J.
Evans, A.G.R., Sabine, K.A., and Amaratunga, G.A.J. see Sabine, K.A.
Evans, B.G., Charlton, D.G., and Holt, A.R. see Charlton, D.G.
Evans, S., and Yeung, W.K. see Yeung, W.K.
Everett, J.L., and East, P.W. see East, P.W.
Extance, P., Pitt, G.D., Neat, R.C., Batchelder, D.N., Jones, R.E., Barnett, J.A., and Pratt, R.H. see Pitt, G.D.

F

Falkner, A.H. Novel travelling-wave energy convertor I p1
Falkner, A.H. Optoelectronic instrument for contour comparison A p133
Fall, E.D.S., Davies, W.S., Hurren, S.J., and Copeland, P.R. see Davies, W.S.
Fantini, F., and Morandi, C. Failure modes and mechanisms for VLSI ICs—a review G p74
Farrier, D.R., and Jeffries, D.J. see Jeffries, D.J.
Farrier, D.R., and Jeffries, D.J. Maximum entropy processing of band-limited spectra. Part 1: Noise-free case F p491
Farrier, D.R., and Jeffries, D.J. Maximum entropy processing of band-limited spectra. Part 2: Recovering a spectrum from noisy measurements F p498
Faulkner, D.W., and Russ, D.M. see Russ, D.M.
Faulkner, D.W., and Stevenson, A. see Stevenson, A.
Feher, K., and Seo, J.-S. see Seo, J.-S.
Fernando, K.V., and Nicholson, H. Identification of linear systems with input and output noise: the Koopmans-Levin method D p30
Fernier, B., Leclerc, D., Brosson, P., and Benoit, J. see Leclerc, D.
Ferrari, R.L. Complementary variational formulation for eddy-current problems using the field variables *E* and *H* directly A p157
Fiddyment, P.J., Nelson, A.W., and Westbrook, L.D. see Nelson, A.W.
Filicori, F., Mirri, D., and Rinaldi, M. Error estimation in sampling digital wattmeters A p122
Findlay, W.J., Taylor, P.D., and Denyer, R.T. see Taylor, P.D.
Finkelstein, L. Address as Chairman of the IEE Management & Design Division: By our work is the city established A p9
Fisher, C.A., Shannon, J.M., Paxman, D.H., and Slatter, J.A.G. The performance of high-voltage field-relieved Schottkey barrier diodes I p257
Fishwick, W. Address as Chairman of the IEE SW Centre: Engineers of quality, needed certainly, but deserved, perhaps A p181
Fitzgerald, R.J. Position, velocity and acceleration estimates from the noisy radar measurements F d65
Flavin, P.G., Hawker, I., Sheppard, M.J., and Scott, D.L. see Hawker, I.
Fleming, P.J., Paul, R.J.A., and Elsamahy, A.M. see Paul, R.J.A.
Floyrac, R., Baribaud, M., Dubois, F., and Wang, S. see Baribaud, M.
Forrest, J.R., Papaioannou, G.J., Kaliakatsos, J.A., and Euthymiou, P.C. see Papaioannou, G.J.
Forster, I., Bumby, J.R., and Clarke, P.H. see Bumby, J.R.
Forward, K.E., Yak, Y.W., and Dillon, T.S. see Yak, Y.W.
Franceschetti, G., and Mohsen, A. Recent developments in the analysis of reflector antennas. A review H p447
Freeman, C. The economics of innovation (Lecture) A p213
Freeman, E.M. Address as Chairman of the IEE Science, Education & Technology Division: All SET for CAE A p15
Freris, L.L., and Tsitsovits, A.J. see Tsitsovits, A.J.
Frosini, G., and Lazzerini, B. Ring-protection mechanisms: general properties and significant implementations E p203
Fukui, Y., Yoneda, S., and Tsutsui, K. see Yoneda, S.
Funabiki, S., and Himei, T. Design procedure of firing angles for harmonic reduction in a thyristor-controlled reactor by asymmetrical firing control C p257
Funabiki, S., and Himei, T. Estimation of torque pulsation due to the behaviour of a convertor and an inverter in a brushless DC-drive system B p215

G

Gai, S., Mezzalama, M., and Prinetto, P. Automated synthesis of digital circuits from RT-level description E p265
Galanos, G.G., Vovos, N., and Giannakopoulos, G. Combined control and protection system for improved performance of HVDC links in the presence of AC faults C d93
Galati, G., and D'Addio, E. see D'Addio, E.
Gardiner, J.G., and Kotsopoulos, S.A. Relationship between base station transmitter multicoupling requirements and frequency planning strategies for cellular mobile radio F p384
Gardiol, F.E., Sphicopoulos, T., and Teodoridis, V. see Sphicopoulos, T.
Gardiol, F.E., and Mosig, J.R. see Mosig, J.R.
Garg, R., and Bhattacharyya, A.K. see Bhattacharyya, A.K.
Gargour, C.S., Ramachandran, V., and Ahmadi, M. see Ramachandran, V.
Garofalo, F., Ambrosino, G., and Celentano, G. see Ambrosino, G.
Gascoigne, J.D., Weston, R.H., and Sumpter, C.M. see Weston, R.H.
Gatellet, J., Mahdavi, J., Schaeffer, A., Velo, C., and Bompa, L. see Mahdavi, J.
Gelbrich, H.-J., and Lorenz, R.W. see Lorenz, R.W.
Georganas, N.D., and Kozlowski, A.J. see Kozlowski, A.J.
Georgiev, G.N., and Ivanov, K.P. see Ivanov, K.P.
Georgiou, G., and Boucouvalas, A.C. Low-loss single-mode optical couplers J p297
German, D.M., Davies, A.E., and Uriola Sereno, J.J. see Davies, A.E.
Geromel, J.C., and Peres, P.L.D. Decentralised load-frequency control D p225
Gharbi, M., Sanchez, J.L., Tranduc, H., and Rossel, P. see Sanchez, J.L.
Ghosh, A., Ledwich, G., Hope, G.S., and Malik, O.P. Power system stabiliser for large disturbances C p14
Giannakopoulos, G., Galanos, G.G., and Vovos, N. see Galanos, G.G.
Gibbon, R.R., and Price, C.F. see Price, C.F.
Gieras, J.F., Eastham, A.R., and Dawson, G.E. Performance calculation for single-sided linear induction motors with a solid steel reaction plate under constant current excitation B p185
Giles, I.P. Feasibility of a heterodyne all-fibre optical gyroscope J p265
Giles, I.P., Al-Chalabi, S.A., Culshaw, B., Davies, D.E.N., and Uttam, D. see Al-Chalabi, S.A.
Godwin, M.P., Henchy, F.B.N., and Marshall, W.N. Design and validation of a corrective subreflector for a 13.7 m antenna by microwave holography H p447
Goodman, C.J., and Cardwell, B.J. see Cardwell, B.J.
Goodman, R.M.F., and McAuley, A.J. New trapdoor-knapsack public-key cryptosystem E p289
Gopal, M., and Pratapachandran Nair, P. Sensitivity-reduced optimal discrete linear regulator with prescribed closed-loop eigenvalues D p18
Gott, G.F., Wong, N.F., and Barclay, L.W. see Wong, N.F.
Graham, J.H., and Meagher, J.F. A sensory-based robotic safety system D p183
Grant, P.M., and Rutter, M.J. see Rutter, M.J.
Green, D.H. Structural properties of pseudorandom arrays and volumes and their related sequences E p133
Greenlay, T., Haykin, S., and Litva, J. see Haykin, S.
Greenwood, C.J., Saul, P.H., and Howard, D.W. see Saul, P.H.
Grierson, J.R., and Hollock, S. Semicustom integrated circuits (Editorial) E/I p49
Griffin, E.J., and Hill, L.D. see Hill, L.D.
Griffiths, M.P., and Connelly, T.G. see Connelly, T.G.
Grimble, M.J. LQG design of discrete systems using a dual criterion D p61
Grujić, Lj., and Shaaban, H. see Shaaban, H.
Gupta, B., Bhattacharya, B.B., Sarkar, S., and Choudhury, A.K. see Bhattacharya, B.B.
Gupta, D.P.Sen, Narahari, N.G., Boyd, I., and Hogg, B.W. An adaptive power-system stabiliser which cancels the negative damping torque of a synchronous generator C p109
Gurcan, M.K., White, P.D., and MacNamee, R.J.G. see White, P.D.

H

Hackam, R., Hannalla, A.Y., and Salama, M.M.A. see Hannalla, A.Y.
Hafez, H.M., Sheikh, A.U.H., and McPhail, B. Experimental evaluation of packet error rates for the 850 MHz mobile channel F p366
Haidar, I., and Brewster, R.L. Code-division multiplex technique using bridge functions F p480
Haji-Michael, C., Dakin, J.P., and Wade, C.A. see Dakin, J.P.
Halász, E., Maloberti, F., Montecchi, F., and Torelli, G. see Maloberti, F.

Halász, S. Suboptimal switching strategies for microprocessor-controlled PWM inverter drives **B** d344
Hamada, K., Wada, M., Shimizu, H., Kume, M., Tajiri, F., Itoh, K., and Kano, G. see Wada, M.
Hamed, S.A., Chalmers, B.J., and Baines, G.D. see Chalmers, B.J.
Hammond, P., Romero-Fuster, M.C., and Robertson, S.A. Fast numerical method for calculation of electric and magnetic fields based on potential-flux duality **A** p84
Hammond, P., and Zhan, Q. Calculation of Poissonian fields by means of the method of tubes and slices **A** p149
Hamza, M.H., and Agathoklis, P. see Agathoklis, P.
Hanbury-Brown, R., Smith, R.A., Mould, A.J., Ward, A.G., and Walker, B.A. see Smith, R.A.
Hannalla, A.Y., Salama, M.M.A., and Hackam, R. A new method of solution of electric-field problems in nonisotropic materials with built-in conducting strips using the nodal method **B** p223
Hara, M., Yashima, M., Tsutsumi, T., and Akazaki, M. Electrification current and voltage on a cylindrical object in the presence of an ion flow field in an air stream **A** p59
Hargrave, P.J., Ward, C.R., Robson, A.J., and McWhirter, J.G. see Ward, C.R.
Harley, R.G., and Balda, J.C. Subsynchronous resonance damping by specially controlling a parallel HVDC link **C** p154
Hashizume, N., Tomizawa, K., Awano, Y., and Kawashima, M. see Tomizawa, K.
Hawker, I., Sheppard, M.J., Scott, D.L., and Flavin, P.G. Sub-nanosecond ECL uncommitted cell array for transmission system applications **G** p60
Hawkins, A.D. The changing technology of electronic components and assemblies (Lecture) **A** p311
Haydock, K.J., and Plumpton, A.T. see Plumpton, A.T.
Hayes, A.J., Davies, J.T., and Eccleston, W. Operation of a single-phase CCD on GaAs at 560 MHz **I** p34
Haykin, S., Greenlay, T., and Litva, J. Performance evaluation of the modified FBLP method for angle of arrival estimation using real radar multipath data **F** p159
Haykin, S., and Metford, P.A.S. see Metford, P.A.S.
Helszajn, J. Contour-integral equation formulation of complex gyrator admittance of junction circulators using triangular resonators **H** p255
Helszajn, J. Design of a 90° 12 GHz Faraday rotator polariser using a cavity technique **H** p237
Helszajn, J., and Thorpe, W. 18–26 GHz finline resonance isolators using hexagonal ferrites **H** p73
Henchy, F.B.N., Godwin, M.P., and Marshall, W.N. see Godwin, M.P.
Henderson, A., and James, J.R. Near-field power transfer effects in small electromagnetic applicators for inducing hyperthermia **H** p189
Henderson, I.A., McGhee, J., and Saffari, M. see McGhee, J.
Henning, I.D., Adams, M.J., and Collins, J.V. see Adams, M.J.
Henning, I.D., and Adams, M.J. see Adams, M.J.
Hesmondhalgh, D.E., and Tipping, D. A miniature transformer-coupled high-speed synchronous motor **B** p319
Hesmondhalgh, D.E., and Tipping, D. Torque availability from small synchronous motors using high coercivity magnets **B** p279
Hewson-Browne, R.C., Kendall, P.C., Marsh, J.H., and Robson, P.N. see Kendall, P.C.
Heydt, G., and Lukanek, F. see Lukanek, F.
Hidaka, K., and Murooka, Y. Electric field measurements in long gap discharge using Pockels device **A** p139
Hill, L.D. Six port reflectometer for the 75–105 GHz band **H** p141
Hill, L.D., and Griffin, E.J. Automatic stepped-frequency six-port reflectometer for WG22 **H** p77
Hill, R.J., Luo, F.L., and Jackson, R.D. see Luo, F.L.
Hill, R.J., and Cork, P. Chopper control of DC disc-armature motor using power MOSFETs **B** p93
Himei, T., and Funabiki, S. see Funabiki, S.
Hinchliffe, J.D.S., Ashpole, R.S., Lewis, D.L., and Powell, R.J.W. see Ashpole, R.S.
Hinton, R.E.P., Rosiewicz, A., and Butler, B.R. see Rosiewicz, A.
Hiyama, T. Optimisation of discrete-type load-frequency regulators considering generation-rate constraints **C** d265
Hiyama, T. Optimisation of discrete-type load-frequency regulators considering generation-rate constraints **C** d265
Ho, K.K.K., Wong, K.P., Humpage, W.D., and Nguyen, T.T. see Wong, K.P.
Hobson, L., and Kargahi, M.R. see Kargahi, M.R.
Hodge, P., Tredgold, R.H., Young, M.C.J., and Hoorfar, A. see Tredgold, R.H.
Hogg, B.W., Gupta, D.P.Sen, Narahari, N.G., and Boyd, I. see Gupta, D.P.Sen
Hollands, P. Use of simulation methods as a design tool in the development of an ESM processing system **F** p292
Hollock, S., and Grierson, J.R. see Grierson, J.R.
Holmes, F.E., and Jamal, H. see Jamal, H.
Holmes, P.G. Single- to 3-phase transient phase conversion in induction motor drives **B** p289
Holt, A.G.J., Maras, A.M., and Davidson, H.D. see Maras, A.M.
Holt, A.G.J., Marir, F., and Shakaff, A.Y. Md. see Marir, F.
Holt, A.R., Charlton, D.G., and Evans, B.G. see Charlton, D.G.
Hooper, J.E.N., and Reeves, A.H. see Reeves, A.H.
Hoorfar, A., Tredgold, R.H., Young, M.C.J., and Hodge, P. see Tredgold, R.H.
Hope, G.S., Ghosh, A., Ledwich, G., and Malik, O.P. see Ghosh, A.
Hope, G.S., Kumar, A., and Malik, O.P. see Kumar, A.
Hope, R.P., and Blandford, S. see Blandford, S.
Hopkins, S.H., and Drazan, P.J. Semiautonomous systems in automatic assembly **D** p174
Hori, R., Kimura, K., Itoh, K., Etoh, J., and Kawajiri, Y. see Kimura, K.
Horno, M., and Medina, F. see Medina, F.
Houpis, C.H. Refined design method for sampled-data control systems: the pseudo-continuous-time (PCT) control system design **D** p69
Howard, D.W., Saul, P.H., and Greenwood, C.J. see Saul, P.H.
Howard, J. Application of a statistical raindrop canting angle model on terrestrial and satellite links **F** p119
Howe, A.F., de Cogan, D., and Webb, P.W. see de Cogan, D.
Hsieh, J., and Arazi, B. Converging ARQ schemes **F** p84
Huang, E., and Barnes, J.P. GTO with monolithic antiparallel diode **I** p245
Hubbi, W. The mismatch theorem and second-order load-flow algorithms **C** p189
Hudson, J.E. Antenna adaptivity by direction finding and null steering **H** p307
Hudson, J.E. Decomposition of antenna signals into plane waves **H** p53
Huertas, J.L., Rueda, A., and Rodriguez-Vazquez, A. see Rueda, A.
Hughes, C.J., and Appleby, M.S. Definition of a cellular mobile radio system **F** p416
Hughes, J.R., Sandoe, J.N., and Slatter, J.A.G. see Sandoe, J.N.
Humpage, W.D., Wong, K.P., Nguyen, T.T., and Ho, K.K.K. see Wong, K.P.
Humpage, W.D., Wong, K.P., Nguyen, T.T., and McLoughlin, J.M. Phase-variable modelling of saturated reactor compensators with particular reference to long-distance transmission **C** p237
Humpage, W.D., Wong, K.P., and Nguyen, T.T. Operating unbalance in long-distance transmission **C** p67
Hurren, S.J., Davies, W.S., Fall, E.D.S., and Copeland, P.R. see Davies, W.S.
Hwang, J.C., Li, H.F., Chan, F.H.Y., Poon, P.W.F., Yan, W.F., and Wong, W.Y. see Li, H.F.

I

Ikegami, T., Yoshikuni, Y., and Kawaguchi, H. see Yoshikuni, Y.
Ilyas, M., and Mouftah, H.T. Delay analysis of a modified cut-through switching for multipacket messages **E** p45
Irven, J., Marshall, A., and Pitt, N.J. see Marshall, A.
Irving, M.R., Clewer, B.C., and Sterling, M.J.H. see Clewer, B.C.
Irving, M.R., Rafian, M., and Sterling, M.J.H. see Rafian, M.
Irwin, G.W., Roddy, D.J., and Wilson, H. see Roddy, D.J.
Ismail, M., and Kim, H.K. Synthesis of new canonical digital ladder filters by continued fractions **G** p1
Ito, M.R., Sack, M. and Cumming, I.G. see Sack, M.
Itoh, K., Kimura, K., Hori, R., Etoh, J., and Kawajiri, Y. see Kimura, K.
Itoh, K., Wada, M., Hamada, K., Shimizu, H., Kume, M., Tajiri, F., and Kano, G. see Wada, M.
Itoh, T., and Yun, S.W. see Yun, S.W.
Ivanov, K.P., and Georgiev, G.N. Asymptotic study of rotationally symmetric waves in a circular anisotropic waveguide **H** p261
Iwazumi, T., and Kando, H. see Kando, H.

J

Jack, M.A., and Bennetts, R.G. see Bennetts, R.G.
Jackson, D.A., Lewin, A.C., and Kersey, A.D. see Lewin, A.C.
Jackson, R.D., Luo, F.L., and Hill, R.J. see Luo, F.L.
Jackson, R.D., and Pong, M.H. see Pong, M.H.
Jackson, R.J., Wilson, A., and Wang, N. see Wilson, A.
Jamal, H., and Holmes, F.E. A digital dual-slope analogue to digital convertor **G** p149
James, J.R., and Henderson, A. see Henderson, A.
Janiczak, B.J. Phase constant characteristics of generalised asymmetric three-coupled microstrip lines **H** p23
Jasmon, G.B., Amin, R.M., and Chuan, C.Y. Performance comparison of two exact outage simulation techniques **C** p285
Jeffries, D.J., and Farrier, D.R. see Farrier, D.R.
Jeffries, D.J., and Farrier, D.R. Asymptotic results for eigenvector methods **F** p589
Jesshope, C.R. Pascal circuit compiler for UK5000 **E/I** p116
Jesshope, C.R., and Ashburn, P. An I^2L clocked gate array for undergraduate design exercises **E/I** p54
John, S.A., and de Cogan, D. see de Cogan, D.
John, W., and Boeck, G. New MIC 4-port circulator based on ferrite loaded microstrip-slot coupler **H** p227
Johns, A.T. Microprocessor-based algorithm for high-resistance earth-fault distance protection **C** d94
Johnson, M.A., and Daniels, M.W. Identification of essential states for reduced-order models using a modal analysis **D** p111
Johnston, S.L. Formulas for measuring radar ECCM capability **F** d198
Jones, B.F., Denbigh, P.L., and Mottram, D.A. see Denbigh, P.L.
Jones, B.K., Bhatti, G.S., and Russell, P.C. see Bhatti, G.S.
Jones, C.J., Rosiewicz, A., Park, C.A., Butler, B.R., and Palin, M.G. see Rosiewicz, A.
Jones, D.I. Response improvements in industrial DC drives derived from optimal analysis **B** p171
Jones, E.V., and Al-Subbagh, M.N. Algorithms for frame alignment — some comparisons **F** p529
Jones, R.E., Pitt, G.D., Extance, P., Neat, R.C., Batchelder, D.N., Barnett, J.A., and Pratt, R.H. see Pitt, G.D.
Jordan, D.W. The cry for useless knowledge: education for a new Victorian technology **A** p587
Judah, S.K. Calibration of multiport reflectometers **H** p468

K

Kakati, D., Ramamurthy, V., and Bhat, K.N. see Ramamurthy, V.
Kal, S., and Chakraborti, N.B. Finite-element analysis of helical phase shifters **H** p231
Kaliakatsos, J.A., Papaioannou, G.J., Euthymiou, P.C., and Forrest, J.R. see Papaioannou, G.J.
Kalyanasundaram, N. On the distribution of current on a straight wire antenna **H** p407
Kando, H., and Iwazumi, T. Design of observers and stabilising feedback controllers for singularly perturbed discrete systems **D** p1
Kano, G., Wada, M., Hamada, K., Shimizu, H., Kume, M., Tajiri, F., and Itoh, K. see Wada, M.
Kargahi, M.R., and Hobson, L. Theoretical investigations into the use of conducting crucibles in medium-frequency metal melting **B** p269
Karunaratne, M.D.G., Michalski, K.A., and Butler, C.M. TE-scattering from a conducting strip loaded by a dielectric cylinder **H** p375
Karunaratne, M.D.G., Michalski, K.A., and Butler, C.M. TM scattering from a conducting strip loaded by a dielectric cylinder **H** p115
Karwowski, A. Low-frequency approach to the problem of a vertical wire antenna above an imperfect ground **H** p123
Karwowski, A., and Szymańda, J. Vector potential of a vertical current element over a lossy ground **H** p326
Kawaguchi, H., Yoshikuni, Y., and Ikegami, T. see Yoshikuni, Y.
Kawajiri, Y., Kimura, K., Itoh, K., Hori, R., and Etoh, J. see Kimura, K.
Kawashima, M., Tomizawa, K., Awano, Y., and Hashizume, N. see Tomizawa, K.
Kay, C.J. Serrodyne modulator in a fibre-optic gyroscope **J** p259
Kazmierski, T.J., and Nichols, K.G. Single iteration approach to backward differentiation formulas **G** p249
Keefe, D., Tomlinson, G.M., Wellings, A.J., and Wand, I.C. Aspects of portability of the UNIX shell **E** p257
Keen, N.J., Ediss, G.A., and S-J, Wang. see Ediss, G.A.
Kelly, R.G., and Owen, A.E. Microelectronic ion sensors: A critical survey **I** p227
Kendall, P.C., Marsh, J.H., Robson, P.N., and Hewson-Browne, R.C. Fraunhofer interference of a dielectric interface with travelling wave radiation and the consequent reduction in dielectric waveguide bending loss **J** p354
Kendall, P.C., Robson, P.N., and Sitch, J.E. Rib waveguide curvature loss: the scalar problem **J** p140
Kersey, A.D., Lewin, A.C., and Jackson, D.A. see Lewin, A.C.
Keyhani, A., and Abur, A. Comparative study of polar and Cartesian co-ordinate algorithms for power-system state-estimation problems **C** p132
Khairetdinov, K.A., Bazhenov, V.Yu., Bogatov, A.P., Eliseev, P.G., Okhotnikov, O.G., Pak, G.T.,

Rakhvalsky, M.P., Soskin, M.S., and Taranenko, V.B. see Bazhenov, V.Yu.
Kidd, P.T., Munro, N., and Winterbone, D.E. Design of compensation schemes for a nonminimum-phase multivariable plant D p75
Kiermasz, A., Barlow, K., and Eccleston, W. see Barlow, K.
Kikucki, M., and Sano, A. see Sano, A.
Killip, E.L. H2S and the navigator A p399
Kim, H.K., and Ismail, M. see Ismail, M.
Kimura, K., Itoh, K., Hori, R., Etoh, J., and Kawajiri, Y. Experimental 1 Mbit DRAM using power reduction techniques I p23
King, R.A., and McLernon, D.C. see McLernon, D.C.
King, T.G., Vitols, R., Murphy, B.J.M., Wray, G.R., and Baker, J.E. see Vitols, R.
Kinniment, D.J., and Sayers, I.L. see Sayers, I.L.
Kino, G.S., Youngquist, R.C., Brooks, J.L., Risk, W.P., and Shaw, H.J. see Youngquist, R.C.
Kinoshita, H., Yokoyama, S., and Yamamoto, K. see Yokoyama, S.
Kirstein, P.T., and Wilbur, S.R. see Wilbur, S.R.
Kishk, A.A., and Shafai, L. see Shafai, L.
Koelmans, A.M., Campbell, R.H., and McLauchlan, M.R. see Campbell, R.H.
Kong, T.C., Rao, P.V., and Sastry, V.V. see Rao, P.V.
Kooi, P.S., Leong, M.S., and Satya Prakash, A.L. Finite-element analysis of the shielded cylindrical dielectric resonator H p7
Korn, I. Effect of adjacent channel interference and frequency-selective fading on outage of digital radio F p604
Korn, I. New method for computation of error probability in PSK systems with interference F p461
Kostić, I.M., and Lukatela, G. see Lukatela, G.
Kotsopoulos, S.A., and Gardiner, J.G. see Gardiner, J.G.
Kouvaras, N., Anastassopoulos, V., and Deliyannis, T. see Anastassopoulos, V.
Kozlowski, A.J., and Georganas, N.D. Modelling of packet-switching networks with nodal blocking F p193
Krakowski, M.R. On certain properties of the electric vector potential in eddy-current problems A p445
Krothapalli, V.P., Lombardi, F., and Nakajima, K. Fault diagnosis for a multistage Banyan interconnection network E p146
Kumar, A., Malik, O.P., and Hope, G.S. Variable-structure-system control applied to AGC of an interconnected power system C p23
Kume, M., Wada, M., Hamada, K., Shimizu, H., Tajiri, F., Itoh, K., and Kano, G. see Wada, M.
Kurniawan, Z., and McLane, P.J. Parameter optimisation for an integrated radar detection and tracking system F p36

L

Laithwaite, E.R., and Williamson, S. see Williamson, S.
Langley, R.J., Lee, C.K., and Parker, E.A. see Lee, C.K.
Langley, R.J., and Lee, C.K. see Lee, C.K.
Last, J.D., and Scholefield, C. Experimental vehicle location system using Decca Navigator and dead-reckoning sensors F p388
Lastman, G.J., Sinha, N.K., and Rózsa, P. On the selection of states to be retained in a reduced-order model D d86
Lau, C.C. Completely decentralised communication control in microcomputer clusters E p333
Laughton, A.K. Mode partition noise in gain-guided lasers and its effect on a multimode fibre-optic system J p359
Laughton, M.A., Saleh, A.O.M., and Stone, G.T. see Saleh, A.O.M.
Laughton, M.A., and Saleh, A.O.M. see Saleh, A.O.M.
Lavers, J.D., and Danai, B. Statistical analysis of electric-arc-furnace parameter variations C p82
Lawson, S.S. Frequency transformations for the simple 2-port wave digital filter adaptor chain G p237
Laybourn, P.J., Bristow, J.P.G., McDonach, A., and Nutt, A.C.G. see Bristow, J.P.G.
Laybourn, P.J., and Urquart, W.P. see Urquart, W.P.
Laybourn, P.J.R., and Dumas, R.H.M. see Dumas, R.H.M.
Lazzerini, B., and Frosini, G. see Frosini, G.
Leclerc, D., Brosson, P., Fernier, B., and Benoit, J. Relative contribution of carrier diffusion and spontaneous emission to the strength and damping of relaxation oscillations in InGaAsP/InP lasers J p28
Ledwich, G., Ghosh, A., Hope, G.S., and Malik, O.P. see Ghosh, A.
Ledwich, G., and O'Brien, M. see O'Brien, M.
Lee, C.K., Langley, R.J., and Parker, E.A. Single-layer multiband frequency-selective surfaces H p411
Lee, C.K., and Langley, R.J. Equivalent-circuit models for frequency-selective surfaces at oblique angles of incidence H p395
Lee, J.P.Y. Detection of complex and simultaneous signals using an instantaneous frequency measurement receiver F p267
Lee, K.F., and Dahele, J.S. see Dahele, J.S.
Lee, Y.-S., and Liu, C.-H. see Liu, C.-H.
Leite da Silva, A.M., Allan, R.N., Soares, S.M., and Arienti, V.L. Probabilistic load flow considering network outages C p139
Leong, M.S., Kooi, P.S., and Satya Prakash, A.L. see Kooi, P.S.
Lewin, A.C., Kersey, A.D., and Jackson, D.A. Two wide-dynamic-range signal-recovery schemes for the fibre-optic gyroscope J p271
Lewis, C.P. w-domain design of single- and double-valued relay control systems D p219
Lewis, D.L., Ashpole, R.S., Powell, R.J.W., and Hinchliffe, J.D.S. see Ashpole, R.S.
Li, H.F., Chan, F.H.Y., Poon, P.W.F., Yan, W.F., Wong, W.Y., and Hwang, J.C. Real-time on-line pattern recognition of eye position and movement E p293
Lim, C.M., and Elangovan, S. Design of stabilisers in multimachine power systems C p146
Lin, Y., and Shafai, L. Moment-method solution of the near-field distribution and far-field patterns of microstrip antennas H p369
Lind, L.F., and Barros, M.deP. see Barros, M.deP.
Lindqvist, G.E., Thylén, L., and Sjöberg, P. see Thylén, L.
Linkens, D.A., Menad, M., and Asbury, A.J. Smith predictor and self-tuning control of muscle-relaxant drug administration D p212
Lister, P.F., and Alhelwani, A.M. Design methodology for self-timed VLSI systems E p25
Littler, G.E. The production of residual currents due to harmonic loading C p195
Litva, J., Haykin, S., and Greenlay, T. see Haykin, S.
Liu, C.-H., and Lee, Y.-S. State-space approach to the analysis and design of a synchronous phase convertor B p164
Liu, R.Y., and Bradley, P.A. Estimation of HF basic circuit reliability from modal parameters F p111
Loew, K. Boundaries between radio cells—influence of buildings and vegetation F p321
Lombardi, F., Krothapalli, V.P., and Nakajima, K. see Krothapalli, V.P.
Lorenz, R.W., and Gelbrich, H.-J. Bit error distribution in digital mobile radiocommunication—comparison between field measurements and fading simulation F p343
Love, W.R., Morris, D., Theaker, C.J., and Phillips, R. see Morris, D.
Lovell, A.C.B. Historical note on H2S A p401
Lucas, J., Clark, S., and Parker, A.B. see Clark, S.
Luk, K.M., and Yu, P.K. Complex-source-point theory of Gaussian beams and resonators J p105
Luk, Kwai-Man, and Yu, Ping-Kong Mode designations of laser beams J p191
Lukanek, F., and Heydt, G. Phase adjustable channel selector circuit for the Gbit/s range G p288
Lukatela, G., and Kostić, I.M. Analysis of a multilink system in the presence of noise, cochannel interference and some hardware imperfections F p511 F e557
Luo, F.L., Jackson, R.D., and Hill, R.J. Digital controller for thyristor current source B p46
Lynch, A.C. History of the electrical units and early standards A p564

M

MacDonald, N. Comments on a simplified analytical stability test for systems with delay D p237
MacNamee, R.J.G., White, P.D., and Gurcan, M.K. see White, P.D.
Macdonald, D.C., Reece, A.B.J., and Turner, P.J. Turbine-generator steady-state reactances C p101
Maclean, T.S.M., Obaid, A.A.S., and Razaz, M. see Obaid, A.A.S.
Magdy, M.A., Paoloni, F.J., and Cheah, J.Y.C. An efficient algorithm for antenna synthesis updating following null-constraint changes H p339
Mahalanabis, A.K., and Pal, J.K. Optimal regulator design of linear multivariable systems with prescribed pole locations in the presence of system disturbances D p231
Mahdavi, J., Schaeffer, A., Velo, C., Bompa, L., and Gatellet, J. New means of measuring current in the vicinity of zero in an AC circuit breaker A p285
Mahmoud, S.F., and Aly, M.S. see Aly, M.S.
Maitra, K., Deb, S., and Roychoudhuri, A. see Deb, S.
Makhsudov, B.I., Manko, M.A., Mikaelyan, G.T., and Van Hoi, Pham see Manko, M.A.
Malik, O.P., Ghosh, A., Ledwich, G., and Hope, G.S. see Ghosh, A.
Malik, O.P., Kumar, A., and Hope, G.S. see Kumar, A.
Maloberti, F., Montecchi, F., Torelli, G., and Halász, E. Bilinear design of fully differential switched-capacitor ladder filters G p266
Maloberti, F., and Montecchi, F. Low-frequency noise reduction in time-shared switched-capacitor ladder filters G p39
Maly, W., and Syrzycki, M. Layout related deformations of meander-type MOS transistor *I/V* characteristics I p13
Mamdani, E.H., Mandič, N.J., and Scharf, E.M. see Mandič, N.J.
Mandič, N.J., Scharf, E.M., and Mamdani, E.H. Practical application of a heuristic fuzzy rule-based controller to the dynamic control of a robot arm D p190
Manko, M.A., Makhsudov, B.I., Mikaelyan, G.T., and Van Hoi, Pham Measurement and analysis of planar stripe-geometry GaAlAs/GaAs heterojunction laser wavefronts and their variation with pumping current J p64
Maras, A.M., Davidson, H.D., and Holt, A.G.J. Resolution of binary signals for threshold detection in narrowband non-Gaussian noise F p187
Marchetti, G., Corsini, G., Dalle Mese, E., and Verrazzani, L. see Corsini, G.
Marir, F., Shakaff, A.Y. Md., and Holt, A.G.J. Two-dimensional convolution using number theoretic transforms without matrix transposition and without overlap G p211 G e302
Markenscoff, P. Markov models for a multiple processor system with a shared bus E p316
Marougi, S.D., and Easa, A.K.M. Acquisition behaviour of phase-locked loops employing an imbalanced phase detector in the absence of noise G p113
Marsh, J.H., Kendall, P.C., Robson, P.N., and Hewson-Browne, R.C. see Kendall, P.C.
Marsh, J.O., and Davies, P.J. see Davies, P.J.
Marshall, A., Irven, J., and Pitt, N.J. Hydrogen and deuterium gas-in-glass effects in single-mode optical fibres J p172
Marshall, W.N., Godwin, M.P., and Henchy, F.B.N. see Godwin, M.P.
Marszalek, W. On using orthogonal functions with singular systems D p131
Martin, Y. *In situ* study of electromigration by Joule displacement microscopy I p9
Mathur, R.M., and Ciric, I.R. see Ciric, I.R.
McAuley, A.J., and Goodman, R.M.F. see Goodman, R.M.F.
McCanny, J.V., Ward, J.S., and McWhirter, J.G. see Ward, J.S.
McDonach, A., Bristow, J.P.G., Laybourn, P.J., and Nutt, A.C.G. see Bristow, J.P.G.
McGeehan, J.P., and Bateman, A.J. see Bateman, A.J.
McGeehan, J.P., and Bateman, A.J. Simple simultaneous carrier and bit synchronisation system for narrowband data transmission F p69
McGeehan, J.P., and Sladen, J.P.H. The tracking performance of a narrowband phase-locked loop in the mobile multipath environment F p73
McGhee, J., Henderson, I.A., and Saffari, M. Asymptotes for boundary determined current density of PIN diodes I p272
McInerney, J., Reekie, L., and Bradley, D.J. Bistability and instability in the output of a twin GaAs/GaAlAs diode external cavity ring laser J p90
McIntosh, D.J., and Sangster, A.J. see Sangster, A.J.
McLane, P.J., and Kurniawan, Z. see Kurniawan, Z.
McLaren, P.G., and Oraee, H. Multiconductor transmission-line model for the line-end coil of large AC machines B p149 B d278
McLauchlan, M.R., Campbell, R.H., and Koelmans, A.M. see Campbell, R.H.
McLernon, D.C., and King, R.A. New result for limit cycles in two-dimensional recursive digital filters G p53
McLoughlin, J.M., Humpage, W.D., Wong, K.P., and Nguyen, T.T. see Humpage, W.D.
McPhail, B., Hafez, H.M., and Sheikh, A.U.H. see Hafez, H.M.
McWhirter, J.G., Ward, C.R., Robson, A.J., and Hargrave, P.J. see Ward, C.R.
McWhirter, J.G., Ward, J.S., and McCanny, J.V. see Ward, J.S.
Meagher, J.F., and Graham, J.H. see Graham, J.H.
Medina, F., and Horno, M. Upper and lower bounds on mode capacitances for a large class of anisotropic multilayered microstrip-like transmission lines H p157
Mellitt, B., Allan, J., and Wu, W.Y. see Allan, J.
Menad, M., Linkens, D.A., and Asbury, A.J. see Linkens, D.A.
Metford, P.A.S., and Haykin, S. Experimental analysis of an innovations-based detection algorithm for surveillance radar F p18
Mezzalama, M., Gai, S., and Prinetto, P. see Gai, S.
Michalski, K.A. On the efficient evaluation of integrals arising in the Sommerfeld halfspace problem H p312
Michalski, K.A., Karunaratne, M.D.G., and Butler, C.M. see Karunaratne, M.D.G.
Michalski, K.A., Smith, C.E., and Butler, C.M. Analysis of a horizontal two-element antenna array above a dielectric halfspace H p335
Midoun, A.H., and Bowes, S.R. see Bowes, S.R.
Midwinter, J.E. 'Light' electronics, myth or reality? (Commissioned IEE review) J p371
Mikaelyan, G.T., Manko, M.A., Makhsudov, B.I., and Van Hoi, Pham see Manko, M.A.
Milovanović, I.Ž., Stojčev, M.K., and Radonjić, Z.Č. see Stojčev, M.K.
Milsom, J.D. Exact ray path calculations in a modi-

fied Bradley/Dudeney model ionosphere H p33
Milutinović, V.M. Generalised WPD procedure for microprocessor-based signal detection F p27
Minard, R.A., Robinson, B.S., and Bates, R.H.T. Full-wave computed tomography. Part 3: Coherent shift-and-add imaging A p50
Mine, H., Ohno, K., and Shioyama, T. see Ohno, K.
Mirbod, S.A., and Dunford, W.G. A capapacitor bank charger using a high-frequency link resonant circuit B p327
Mirri, D., Filicori, F., and Rinaldi, M. see Filicori, F.
Mitachi, S., Ohishi, Y., Takahashi, S., and Miyashita, T. see Ohishi, Y.
Miyachi, K., Sawa, K., and Yamamoto, H. see Sawa, K.
Miyashita, T., Ohishi, Y., Mitachi, S., and Takahashi, S. see Ohishi, Y.
Moglestue, C. Monte Carlo particle simulation of a GaAs MESFET with a gate trench sloping towards the source I p217
Mohsen, A. Representation of the electromagnetic fields of a dipole above an inhomogeneous half space H p127
Mohsen, A., and Franceschetti, G. see Franceschetti, G.
Montecchi, F., Maloberti, F., Torelli, G., and Halász, E. see Maloberti, F.
Montecchi, F., and Maloberti, F. see Maloberti, F.
Morandi, C., and Fantini, F. see Fantini, F.
Morfee, P.J., Bradley, D.A., and Wilson, L.A. see Bradley, D.A.
Morgan, G.B., and Osborne, M.A. see Osborne, M.A.
Morgan, N.P., and Tzou, K.-H. see Tzou, K.-H.
Morgan, T.E. Spiral antennas for ESM F p245
Morgan, V.T. Joule adiabatic heating of high-resistance alloys A d74
Morris, D., Theaker, C.J., Phillips, R., and Love, W.R. Virtual memory for microcomputers E p323
Morrison, I.F., and Yang, Q.S. see Yang, Q.S.
Morrow, R.J. Electromagnetic environment synthesis—a tool for ESM system development and support F p298
Moschytz, G.S., and Mulawka, J.J. see Mulawka, J.J.
Mosig, J.R., and Gardiol, F.E. General integral equation formulation for microstrip antennas and scatterers H p424
Mottram, D.A., Denbigh, P.L., and Jones, B.F. see Denbigh, P.L.
Moufiah, H.T., and Abo-Taleb, A. see Abo-Taleb, A.
Moufiah, H.T., and Ilyas, M. see Ilyas, M.
Mould, A.J., Smith, R.A., Hanbury-Brown, R., Ward, A.G., and Walker, B.A. see Smith, R.A.
Moupfouma, F. Model of rainfall-rate distribution for radio system design H p39
Mudd, M.S.J., Wood, I.C., Taylor, D.G., Ward, P.J., and Saul, P.H. see Wood, I.C.
Mujahid, A., El-Shobokshy, M.S., and Zakzouk, A.K.M. see El-Shobokshy, M.S.
Mulawka, J.J., and Moschytz, G.S. A by-inspection analysis of SC networks using direct topological rules G p255
Munro, N., Kidd, P.T., and Winterbone, D.E. see Kidd, P.T.
Murgatroyd, P.N., and Belahrache, D. Economic designs for single-layer toroidal inductors B p315
Murooka, Y., and Hidaka, K. see Hidaka, K.
Murphy, B.J.M., Vitols, R., Wray, G.R., Baker, J.E., and King, T.G. see Vitols, R.
Murray, A.F., and Denyer, P.B. Testability and self-test in NMOS and CMOS VLSI signal processors G p93

N

Nagaraj, K. High-resolution switched-capacitor algorithmic digital-to-analogue convertor G p200
Naidu, S.R., and de Lima, F.N. A frequency-dependent transmission line model for electromagnetic transient studies C p294
Nakajima, K., Krothapalli, V.P., and Lombardi, F. see Krothapalli, V.P.
Narahari, N.G., Gupta, D.P.Sen, Boyd, I., and Hogg, B.W. see Gupta, D.P.Sen
Neat, R.C., Pitt, G.D., Extance, P., Batchelder, D.N., Jones, R.E., Barnett, J.A., and Pratt, R.H. see Pitt, G.D.
Nelson, A.W., Westbrook, L.D., and Fiddyment, P.J. Design and fabrication of 1.5 μm ridge waveguide distributed feedback lasers J p12
Nengjing, Li Formulas for measuring radar ECCM capability F d198
Nes, H. Dimensioning technique for meteor-burst communication systems F p505
Nešić, A., and Popović, B.D. see Popović, B.D.
Nešic, A., and Popović, B.D. Analysis of slot antenna on dielectric substrate H p474
Neuman, C.P., and Tourassis, V.D. see Tourassis, V.D.
Newcombe, L.A., and Sitch, J.E. Reactive nonlinearities in transmission-line models A p95
Ng, T.S. Array pattern synthesis by the method of alternating orthogonal projections: the general case H p451
Ng, T.S. Generalised array pattern synthesis using the projection matrix H p44
Nguyen, T.T., Humpage, W.D., Wong, K.P., and McLoughlin, J.M. see Humpage, W.D.
Nguyen, T.T., Humpage, W.D., and Wong, K.P. see Humpage, W.D.
Nguyen, T.T., Wong, K.P., Humpage, W.D., and Ho, K.K.K. see Wong, K.P.
Ni, E., and Stumper, U. Permittivity measurements using a frequency-tuned microwave TE_{01} cavity resonator H p27
Nichols, K.G., and Kazmierski, T.J. see Kazmierski, T.J.
Nicholson, H., and Fernando, K.V. see Fernando, K.V.
Nicol, A., and Davis, L.E. Nonreciprocal coupling in dielectric image lines H p269
Nisbet, W.T. Microwave ferrite engineering (Editorial) H p221
Nishizawa, J., and Suto, K. see Suto, K.
Nutt, A.C.G., Bristow, J.P.G., Laybourn, P.J., and McDonach, A. see Bristow, J.P.G.
Nuttall, J.D. Requirements for gyroscopes for inertial navigation J p250
Nuttall, K.I., Walker, P., and Davies, J.T. see Walker, P.

O

O'Brien, M., and Ledwich, G. Placement of static compensators for stability improvement C p30
O'Hara, S. The evolution of a modern telecommunications network to the year 2000 and beyond (Lecture) A p467
O'Reilly, J.J., and Yichao, Wang Line code design for digital pulse-position modulation F p441
O'Reilly, J.J., and de Oliveira Duarte, A.M. see de Oliveira Duarte, A.M.
O'Reilly, J.J., and de Oliveira Duarte, A.M. Error propagation in decision feedback receivers F p561
O'Reilly, J.J., da Rocha, J.R.F., and Schumacher, K. Influence of timing errors on the performance of direct-detection optical-fibre communication systems J p309
Obaid, A.A.S., Maclean, T.S.M., and Razaz, M. Propagation characteristics of rectangular corrugated waveguides H p413
Ohishi, Y., Mitachi, S., Takahashi, S., and Miyashita, T. Effects of gamma rays on optical transmission of ZrF_4-based fluoride fibres J p114
Ohno, K., Shioyama, T., and Mine, H. Optimal channel assignment in a packet-switching network with a conflict-free multiple-access scheme F p510
Okhotnikov, O.G., Bazhenov, V.Yu., Bogatov, A.P., Eliseev, P.G., Pak, G.T., Rakhvalsky, M.P., Soskin, M.S., Taranenko, V.B., and Khairetdinov, K.A. see Bazhenov, V.Yu.
Olver, A.D., and Voglis, E.E. see Voglis, E.E.
Omani, F.K., and Sinha, N.K. Modified approach to state-space self-tuning control with pole assignment D p257
Oraee, H., and McLaren, P.G. see McLaren, P.G.
Orchard, H.J., Elliot, R.S., and Stern, G.J. Optimising the synthesis of shaped beam antenna patterns H p63
Orgel, N. History of fighter direction A p411
Ormondroyd, R.F., and Al-Rawas, L.A.A. An improved delay lock loop for use in ranging and data modulated spread-spectrum systems G p291
Osborne, M.A., and Morgan, G.B. A load-pull technique for the determination of transistor *S* parameters under large-signal conditions H p419
Osiński, M., and Adams, M.J. Transient time-averaged spectra of rapidly-modulated semiconductor lasers J p34
Owen, A.E., and Kelly, R.G. see Kelly, R.G.
Owyang, K., Yilmaz, H., Chen, L.-S., Van Dell, W.R., Benjamin, J., and Chang, M. see Yilmaz, H.

P

Pak, G.T., Bazhenov, V.Yu., Bogatov, A.P., Eliseev, P.G., Okhotnikov, O.G., Rakhvalsky, M.P., Soskin, M.S., Taranenko, V.B., and Khairetdinov, K.A. see Bazhenov, V.Yu.
Pal, A., and Bhattacharya, B. Syndrome-testable logic design using DSTL arrays for detecting stuck-at and bridging faults E p251
Pal, J.K., and Mahalanabis, A.K. see Mahalanabis, A.K.
Palin, M.G., Rosiewicz, A., Park, C.A., Butler, B.R., and Jones, C.J. see Rosiewicz, A.
Palka, R. Synthesis of electrical fields by optimisation of the shape of region boundaries A p28
Panda, M., and Prusty, S. see Prusty, S.
Pandit, M., Baier, A., and Baier, P.W. see Baier, A.
Paoloni, F.J., Magdy, M.A., and Cheah, J.Y.C. see Magdy, M.A.
Papadopoulos, D.P., and Paraskevopoulos, P.N. Decoupling techniques applied to the design of a controller for an unregulated synchronous machine C p277
Papaioannou, G.J., Kaliakatsos, J.A., Euthymiou, P.C., and Forrest, J.R. Photovoltaic effects of GaAs MESFET layers I p167
Papliński, A.P. Matrix multiplication and division of polynomials D p95
Paraskevopoulos, P.N., and Papadopoulos, D.P. see Papadopoulos, D.P.
Park, C.A., Rosiewicz, A., Butler, B.R., Jones, C.J., and Palin, M.G. see Rosiewicz, A.
Park, W.S., and Seshadri, S.R. Theory of the grating coupler for a grounded-dielectric-slab-waveguide H p149
Parker, A.B., Clark, S., and Lucas, J. see Clark, S.
Parker, E.A., Lee, C.K., and Langley, R.J. see Lee, C.K.
Parker, E.A., and Vardaxoglou, J.C. Plane-wave illumination of concentric-ring frequency-selective surfaces H p176
Parks, P.C., and Anderson, B.D.O. see Anderson, B.D.O.
Parsons, J.D. Land mobile radio (Editorial) F p305
Parsons, J.D., and Bajwa, A.S. see Bajwa, A.S.
Parsons, J.D., and Reyhan, T. Prediction of bit error rate in the presence of impulsive noise: a numerical approach using measured noise data F p334
Patel, P.D., and Chan, K.K. Optimisation of contoured beams for satellite antennas H p400
Paul, R.J.A., Fleming, P.J., and Elsamahy, A.M. Adaptive microprocessor control of a linear helical reluctance motor B p106
Paul, R.J.A., Fleming, P.J., and Elsamahy, A.M. Frequency-response identification of a linear helical reluctance motor B p101
Paxman, D.H., Fisher, C.A., Shannon, J.M., and Slatter, J.A.G. see Fisher, C.A.
Penn, M.G. Impact and opportunities for application specific integrated circuits (ASICs) E/I p130
Peres, P.L.D., and Geromel, J.C. see Geromel, J.C.
Petkovski, D. Robustness of decentralised control systems subject to sensor perturbations D p53
Petty, M.C., Batey, J., and Roberts, G.G. A comparison of the photovoltaic and electroluminescent effects in GaP/Langmuir-Blodgett film diodes I p133
Phillips, R., Morris, D., Theaker, C.J., and Love, W.R. see Morris, D.
Phillips, V.J. Optical, chemical and capillary oscillographs A p503
Phillips, V.J., and Strange, P. History of electrical engineering (Editorial) A p489
Pitt, G.D., Extance, P., Neat, R.C., Batchelder, D.N., Jones, R.E., Barnett, J.A., and Pratt, R.H. Optical-fibre sensors (Commissioned IEE review) J p214
Pitt, N.J., Marshall, A., and Irven, J. see Marshall, A.
Platte, W. Optoelectronic microwave switching J p126
Plotkin, E.I., Swamy, M.N.S., and Roytman, L.M. see Swamy, M.N.S.
Plumpton, A.T., and Haydock, K.J. A double etched profile for improved breakdown voltage in *pn*-junctions: theory and practice I p291
Poh, B.S. Prediction of self-sustained oscillations in buried-heterostructure stripe lasers I p29
Pong, M.H., and Jackson, R.D. Computer-aided design of power electronic circuits B p301
Poon, P.W.F., Li, H.F., Chan, F.H.Y., Yan, W.F., Wong, W.Y., and Hwang, J.C. see Li, H.F.
Popović, B.D., and Nešić, A. Some extensions of the concept of complementary electromagnetic structures H p131
Popović, B.D., and Nešic, A. see Nešic, A.
Porter, W.A., and Aravena, J.L. Local state models for *m*-dimensional operators G p205
Powell, R.J.W., Ashpole, R.S., Lewis, D.L., and Hinchliffe, J.D.S. see Ashpole, R.S.
Prabhu, V.K., and Steele, R. see Steele, R.
Prasad, S., and Quynh, L.C. see Quynh, L.C.
Pratapachandran Nair, P., and Gopal, M. see Gopal, M.
Pratt, R.H., Pitt, G.D., Extance, P., Neat, R.C., Batchelder, D.N., Jones, R.E., and Barnett, J.A. see Pitt, G.D.
Preis, D., Willey, T., Chapman, R., Yoho, H., and Durrani, T.S. see Willey, T.
Price, C.F., and Gibbon, R.R. Statistical approach to thermal rating of overhead lines for power transmission and distribution C d95
Prinetto, P., Gai, S., and Mezzalama, M. see Gai, S.
Pringle, J.W.S. The work of TRE in the invasion of Europe A p340
Proudler, I.K., and Rayner, P.J.W. New design procedure for digital filters based on a finite-state machine implementation F p581
Prusty, S., and Panda, M. Predetermination of lateral length to prevent overvoltage problems due to open conductors in three-phase systems C p49
Puthenpura, S., and Sinha, N.K. see Sinha, N.K.

Q

Quan-sheng, Z., Shou-wu, W., Zhao-yin, L., and Rong-han, W. see Shou-wu, W.

Quynh, L.C., and Prasad, S. Class of binary cipher sequences with best possible autocorrelation function **F** p576

R

Radonjić, Ž.Č., Stojčev, M.K., and Milovanović, I.Ž. see Stojčev, M.K.
Rafian, M., Sterling, M.J.H., and Irving, M.R. Decomposed load-flow algorithm suitable for parallel processor implementation **C** p281
Rahman, B.M.A., and Davies, J.B. Vector–*H* Finite element solution of GaAs/GaAlAs rib waveguides **J** p349
Rakhvalsky, M.P., Bazhenov, V.Yu., Bogatov, A.P., Eliseev, P.G., Okhotnikov, O.G., Pak, G.T., Soskin, M.S., Taranenko, V.B., and Khairetdinov, K.A. see Bazhenov, V.Yu.
Ramachandra, K.V. Position, velocity and acceleration estimates from the noisy radar measurements **F** d65
Ramachandran, V., Gargour, C.S., and Ahmadi, M. Cascade realisation of the irrational immittance $s^{1/2}$ **G** p64
Ramamurthy, V., Bhat, K.N., and Kakati, D. Computer-aided thermal analysis of reverse-biased PIN diodes **I** d170
Ramshaw, R.S., and Xie, G. Dual model of a DC machine with gyrators **B** p57
Rang, T. One-dimensional numerical simulation of complementary power Schottky structures **I** p253
Rankin, P.J., and Soin, R.S. see Soin, R.S.
Rao, P.V., Kong, T.C., and Sastry, V.V. A new algorithm for a nonlinear multicriteria decision-making problem **C** p118
Rappaport, S.S., and Wilson, N.D. see Wilson, N.D.
Rashid, M.H., and Bhadra, S.N. Filter design for multiphase DC choppers **B** p77
Rathore, T.S. Theorems on power, mean and RMS values of uniformly sampled periodic signals **A** e98
Rawlinson, J.D.S. Development of radar for the Royal Navy 1935–44 **A** p441
Rayner, P.J.W., and Proudler, I.K. see Proudler, I.K.
Razaz, M., Obaid, A.A.S., and Maclean, T.S.M. see Obaid, A.A.S.
Razban, T., Bouthinon, M., and Coumes, A. Microstrip circuit for converting microwave low power to DC energy **H** p107
Reece, A.B.J., Macdonald, D.C., and Turner, P.J. see Macdonald, D.C.
Reed, I.S., and Truong, T.K. Error-trellis syndrome decoding techniques for convolutional codes **F** p77
Reekie, L., McInerney, J., and Bradley, D.J. see McInerney, J.
Reeves, A.H., and Hooper, J.E.N. Oboe: history and development **A** p394
Reyhan, T., and Parsons, J.D. see Parsons, J.D.
Ridley, B.K. Factors affecting impact ionisation in multilayer avalanche photodiodes **J** p177
Riley, S.P., Barnes, S.R., and Wolfe, S.V. see Barnes, S.R.
Rinaldi, M., Filicori, F., and Mirri, D. see Filicori, F.
Risk, W.P., Youngquist, R.C., Brooks, J.L., Kino, G.S., and Shaw, H.J. see Youngquist, R.C.
Ritchie, S., Robertson, M.J., and Dayan, P. see Robertson, M.J.
Rózsa, P., Lastman, G.J., and Sinha, N.K. see Lastman, G.J.
Robb, A.C. An essay in futurology: groups, networks and complexity in the open society **A** p67
Roberts, G.G., Petty, M.C., and Batey, J. see Petty, M.C.
Robertson, M.J., Ritchie, S., and Dayan, P. Semiconductor waveguides: analysis of optical propagation in single rib structures and directional couplers **J** p336
Robertson, S.A., Hammond, P., and Romero-Fuster, M.C. see Hammond, P.
Robertson, S.R.M., and Rogers, A.J. Measurement of DC electric fields using the electro-optic effect **J** p195
Robinson, B.S., Minard, R.A., and Bates, R.H.T. see Minard, R.A.
Robson, A.J., Ward, C.R., Hargrave, P.J., and McWhirter, J.G. see Ward, C.R.
Robson, P.N., Kendall, P.C., Marsh, J.H., and Hewson-Browne, R.C. see Kendall, P.C.
Robson, P.N., Kendall, P.C., and Sitch, J.E. see Kendall, P.C.
Roddy, D.J., Irwin, G.W., and Wilson, H. Approaches to roll-loop design for BTT CLOS guidance **D** p268
Rodger, D., and Eastham, J.F. The use of transformations in applying boundary conditions to three-dimensional vector field problems **A** p165
Rodriguez-Vazquez, A., Rueda, A., and Huertas, J.L. see Rueda, A.
Rogers, A.J. Polarisation optics for monomode fibre sensors **J** p303
Rogers, A.J., and Robertson, S.R.M. see Robertson, S.R.M.
Rogers, J.A.V. ESM processor system for high pulse density radar environments **F** p621
Rokos, H., and Beesley, C. see Beesley, C.
Romero-Fuster, M.C., Hammond, P., and Robertson, S.A. see Hammond, P.
Rong-han, W., Shou-wu, W., Quan-sheng, Z., and Zhao-yin, L. see Shou-wu, W.
Rosiewicz, A., Butler, B.R., and Hinton, R.E.P. Temperature-dependent lifetests of IRW lasers operating at 1.3 μm **J** p97
Rosiewicz, A., Park, C.A., Butler, B.R., Jones, C.J., and Palin, M.G. Improvement of high reliability inverted rib-waveguide lasers by the observation of degradation mechanisms **J** p319
Rossel, P., Bellaouar, A., and Sarrabayrouse, G. see Bellaouar, A.
Rossel, P., Sanchez, J.L., Gharbi, M., and Tranduc, H. see Sanchez, J.L.
Roulston, D.J., and Eltoukhy, A.A. Modelling bulk and surface recombination in the sidewall space-charge layer of an emitter-base junction **I** p205
Roychoudhuri, A., Deb, S., and Maitra, K. see Deb, S.
Roytman, L.M., Swamy, M.N.S., and Plotkin, E.I. see Swamy, M.N.S.
Rudge, A.W. Address of Chairman of the IEE Electronics Division: Sky-hooks, fish-warmers and hub-caps; milestones in satellite communications **F** p1
Rueda, A., Huertas, J.L., and Rodriguez-Vazquez, A. Basic circuit structures for the synthesis of piecewise polynomial one-port resistors **G** p123
Rumala, S.N. Modelling of commodity retail networks at static equilibrium price levels **G** p167
Rungis, J. The effect of atmospheric humidity on the corona extinction voltage of circular cylinders **A** p136
Russ, D.M., and Faulkner, D.W. Comparison of five high speed bistables by computer simulation **I** p210
Russell, P.C., Bhatti, G.S., and Jones, B.K. see Bhatti, G.S.
Rutter, M.J., and Grant, P.M. Timed gradient adaptive lattice equaliser **F** p181
Ryle, M. D – 13: some personal memories of 24th–28th May 1944 **A** p438

S

S-J, Wang., Ediss, G.A., and Keen, N.J. see Ediss, G.A.
Sabbagh, I., and Appleby, D.G. Adaptive slow frequency-hopping system for land mobile radio **F** p375
Sabine, K.A., Amaratunga, G.A.J., and Evans, A.G.R. Threshold shift of NMOS transistors due to high energy arsenic source/drain implantation **I** p163
Sack, M., Ito, M.R., and Cumming, I.G. Application of efficient linear FM matched filtering algorithms to synthetic aperture radar processing **F** p45
Saffari, M., McGhee, J., and Henderson, I.A. see McGhee, J.
Salama, M.M.A., Hannalla, A.Y., and Hackam, R. see Hannalla, A.Y.
Salathé, R.P. Optically excited (Ga, In, As, P) film lasers **J** p77
Saleh, A.O.M., Laughton, M.A., and Stone, G.T. M-to *N*-phase transformer models in phase coordinates **C** p41
Saleh, A.O.M., and Laughton, M.A. Cluster analysis of power-system networks for array processing solutions **C** p172
Saleh, N., El-Hennawy, A., and Borel, D. see El-Hennawy, A.
Sali, S. New possibilities for phaseless microwave diagnostics. Part 2: The uniqueness problem and half plane imaging **H** p299
Sali, S., and Anderson, A.P. see Anderson, A.P.
Sanchez, J.L., Gharbi, M., Tranduc, H., and Rossel, P. Quasisaturation effect in high-voltage VDMOS transistors **I** p42
Sandoe, J.N., Hughes, J.R., and Slatter, J.A.G. Characterisation and modelling of SIPOS on silicon high-voltage devices **I** p281
Sangster, A.J., and McIntosh, D.J. Circular-electric-mode hybrid coupler **H** p164
Sangster, A.J., and McIntosh, D.J. Coaxial waveguide to circular cylindrical waveguide junction **H** p203
Sano, A., and Kikucki, M. Adaptive control of arterial oxygen pressure of newborn infants under incubator oxygen treatments **D** p205
Santiago, J., Au, S., and Smy, P.R. see Au, S.
Sarkar, S., Bhattacharya, B.B., Gupta, B., and Choudhury, A.K. see Bhattacharya, B.B.
Sarma, J., and Shore, K.A. Electromagnetic theory for optical disc resonators **J** p325
Sarrabayrouse, G., Bellaouar, A., and Rossel, P. see Bellaouar, A.
Sastry, V.V., Rao, P.V., and Kong, T.C. see Rao, P.V.
Satya Prakash, A.L., Kooi, P.S., and Leong, M.S. see Kooi, P.S.
Saul, P.H., Howard, D.W., and Greenwood, C.J. VLSI process compatible 8 bit CMOS DAC **E/I** p99
Saul, P.H., Wood, I.C., Mudd, M.S.J., Taylor, D.G., and Ward, P.J. see Wood, I.C.
Savic, M.S. Sensitivity analysis of lightning performance calculations for transmission lines and substations **C** p217
Sawa, K., Yamamoto, H., and Miyachi, K. Analysis of armature circuit inductance of DC machines by FEM **B** p307
Sayers, I.L., and Kinniment, D.J. Low-cost residue codes and their application to self-checking VLSI systems **E** p197
Schaeffer, A., Mahdavi, J., Velo, C., Bompa, L., and Gatellet, J. see Mahdavi, J.
Scharf, E.M., Mandič, N.J., and Mamdani, E.H. see Mandič, N.J.
Schimpe, R. Design considerations of the metal-clad ridge-waveguide laser with distributed feedback **J** p133
Schimpe, R. Intensity distribution of semiconductor laser emission due to the excitation of satellite modes **J** p146
Schoeman, J.J., van der Broeck, H.W., and van Wyk, J.D. see van der Broeck, H.W.
Schofield, M.J. Knowledge-based test generation **G** p108
Scholefield, C., and Last, J.D. see Last, J.D.
Schumacher, K., O'Reilly, J.J., and da Rocha, J.R.F see O'Reilly, J.J.
Scott, D.L., Hawker, I., Sheppard, M.J., and Flavin, P.G. see Hawker, I.
Seagar, A.D., and Bates, R.H.T. Full-wave computed tomography Part 4: Low-frequency electric current CT **A** p455
Searle, G.C.L., and Smith, A.C. see Smith, A.C.
Sebak, A.A., and Shafai, L. see Shafai, L.
Self, A.G., and Smith, B.G. Intercept time and its prediction **F** p215
Seo, J.-S., and Feher, K. Performance of SQAM systems in a nonlinearly amplified multichannel interference environment **F** p175
Ser, W., and Clark, A.P. Near-maximum-likelihood detectors for binary signals **F** p485
Seshadri, S.R., and Park, W.S. see Park, W.S.
Shaaban, H., and Grujić, Lj. Transient stability analysis of large-scale power systems with speed governor via vector Lyapunov functions **D** p45
Shafai, L., and Kishk, A.A. Phase centre of small primary feeds and its effects on the feed performance **H** p207
Shafai, L., and Lin, Y. see Lin, Y.
Shafai, L., and Sebak, A.A. Radiation characteristics and polarisation of undulated microstrip line antennas **H** p433
Shakaff, A.Y. Md., Marir, F., and Holt, A.G.J. see Marir, F.
Shalaby, M. Phase-angle control of the repulsion/drive force ratio in two-phase linear induction motor with nonferromagnetic secondary **B** p81
Shannon, J.M., Fisher, C.A., Paxman, D.H., and Slatter, J.A.G. see Fisher, C.A.
Shaw, H.J., Youngquist, R.C., Brooks, J.L., Risk, W.P., and Kino, G.S. see Youngquist, R.C.
Shaw, S.J., Burgess, N., Damper, R.I., and Wilkins, D.R.J. see Burgess, N.
Sheikh, A.U.H., Hafez, H.M., and McPhail, B. see Hafez, H.M.
Sheppard, M.J., Hawker, I., Scott, D.L., and Flavin, P.G. see Hawker, I.
Shima, T. Bumpless monotonic bicubic interpolation for MOSFET device modelling **I** p147
Shimizu, H., Wada, M., Hamada, K., Kume, M., Tajiri, F., Itoh, K., and Kano, G. see Wada, M.
Shioyama, T., Ohno, K., and Mine, H. see Ohno, K.
Shore, K.A. Model for semiconductor laser structures incorporating longitudinal and transverse variations **J** p52
Shore, K.A. Optical switching properties of semiconductor lasers: analysis in canonical form **J** p85
Shore, K.A., and Sarma, J. see Sarma, J.
Shortland, M.G. Address as Chairman of the IEE Computing & Control Division: The integration of computing and control **E** p1
Shou-wu, W., Quan-sheng, Z., Zhao-yin, L., and Rong-han, W. Self-oscillation frequency characteristics of a GaAs/GaAlAs *pn-pn* laser **J** p69
Shroff, D.H., and Stannett, A.W. A review of paper aging in power transformers **C** p312
Silva, M., and David, R. Binary-decision graphs for implementation of Boolean functions **E** p175
Sinha, N.K., Lastman, G.J., and Rózsa, P. see Lastman, G.J.
Sinha, N.K., and Omani, F.K. see Omani, F.K.
Sinha, N.K., and Puthenpura, S. Choice of the sampling interval for the identification of continuous-time systems from samples of input/output data **D** p263
Sitch, J.E., Kendall, P.C., and Robson, P.N. see Kendall, P.C.
Sitch, J.E., and Newcombe, L.A. see Newcombe, L.A.
Siuzdak, J. Compensative phase meter with lock-in detection **G** p189 **G** e302
Sjöberg, P., Thylén, L., and Lindqvist, G.E. see Thylén, L.
Sladen, J.P.H., and McGeehan, J.P. see McGeehan, J.P.
Slatter, J.A.G., Fisher, C.A., Shannon, J.M., and Paxman, D.H. see Fisher, C.A.
Slatter, J.A.G., Sandoe, J.N., and Hughes, J.R. see

Sandoe, J.N.
Smart, A., Backhouse, P., and Apsley, N. see Backhouse, P.
Smith, A.C., and Searle, G.C.L. Empirical observations of a sonar adaptive array F p595
Smith, B.G., and Self, A.G. see Self, A.G.
Smith, C., Taylor, R.I., Abram, R.A., and Burt, M.G. see Taylor, R.I.
Smith, C.E., Michalski, K.A., and Butler, C.M. see Michalski, K.A.
Smith, J.B. The new H2Ss A p404
Smith, R.A., Hanbury-Brown, R., Mould, A.J., Ward, A.G., and Walker, B.A. ASV: the detection of surface vessels by airborne radar A p359
Smy, P.R., Au, S., and Santiago, J. see Au, S.
Soares, S.M., Leite da Silva, A.M., Allar, R.N., and Arienti, V.L. see Leite da Silva, A.M.
Soegaard-Knudsen, M. Hierarchical specification and switch-level simulation of digital circuits E/I p102
Soin, R.S., and Rankin, P.J. Efficient tolerance analysis using control variates G p131
Sommariva, A.M., and Calandra, E.F. see Calandra, E.F.
Sommers, Jr, H.S. Critical analysis and correction of the rate equation for the injection laser J p38
Sood, V.K. Combined control and protection system for improved performance of HVDC links in the presence of AC faults C d93
Soskin, M.S., Bazhenov, V.Yu., Bogatov, A.P., Eliseev, P.G., Okhotnikov, O.G., Pak, G.T., Rakhvalsky, M.P., Taranenko, V.B., and Khairetdinov, K.A. see Bazhenov, V.Yu.
Sphicopoulos, T., Teodoridis, V., and Gardiol, F.E. Dyadic Green function for the electromagnetic field in multilayered isotropic media: an operator approach H p329
Spooner, E. DC traction motor with slotless armature B p61
Spooner, E. Multilayer analysis of electromagnetic systems incorporating layers of discrete conductors B p72
Stanbury, H.J. An industry-based standards system for the measurement of power loss and apparent power of electrical sheet steel A p129
Stannett, A.W., and Shroff, D.H. see Shroff, D.H.
Steele, R. Towards a high-capacity digital cellular mobile radio system F p405
Steele, R., and Prabhu, V.K. High-user-density digital cellular mobile radio systems F p396
Stefan Johansson, F. Analysis and design of double-layer frequency-selective surfaces H p319
Sterling, M.J.H., Clewer, B.C., and Irving, M.R. see Clewer, B.C.
Sterling, M.J.H., Rafian, M., and Irving, M.R. see Rafian, M.
Stern, G.J., Orchard, H.J., and Elliot, R.S. see Orchard, H.J.
Stevenson, A., and Faulkner, D.W. Proprietary semicustom regenerator IC for 140 Mbit/s optical transmission systems E/I p62
Steventon, A.G. Semiconductor injection lasers (editorial) J p2
Stojčev, M.K., Milovanović, I.Ž., and Radonjić, Z.Č. Some shifting methods for matrix multiplication E p33
Stone, G.T., Saleh, A.O.M., and Laughton, M.A. see Saleh, A.O.M.
Stoten, D.P. A unified approach to the decoupled discrete adaptive control of manipulators D p151
Strange, P. Duplex telegraphy and the artificial line: the beginnings of system modelling A p543
Strange, P. Two electrical periodicals: *The Electrician* and *The Electrical Review* 1880–1890 A p574
Strange, P., and Phillips, V.J. see Phillips, V.J.
Stumper, U., and Ni, E. see Ni, E.
Sumpter, C.M., Weston, R.H., and Gascoigne, J.D. see Weston, R.H.
Sundberg, C.-E., and Svensson, A. see Svensson, A.
Suto, K., and Nishizawa, J. Semiconductor Raman laser J p81
Svensson, A., and Sundberg, C.-E. Performance of generalised AMF receivers for continuous phase modulation F p541
Swamy, M.N.S., Roytman, L.M., and Plotkin, E.I. On stability tests for two-dimensional digital filters G p57
Symons, E.D.P. Two electrical book collections: The Ronalds and Thompson Libraries A p582
Syrzycki, M., and Maly, W. see Maly, W.
Szymańda, J., and Karwowski, A. see Karwowski, A.

T

Taalab, A.I., and Yacamini, R. see Yacamini, R.
Tajiri, F., Wada, M., Hamada, K., Shimizu, H., Kume, M., Itoh, K., and Kano, G. see Wada, M.
Takahashi, S., Ohishi, Y., Mitachi, S., and Miyashita, T. see Ohishi, Y.
Taranenko, V.B., Bazhenov, V.Yu., Bogatov, A.P., Eliseev, P.G., Okhotnikov, O.G., Pak, G.T., Rakhvalsky, M.P., Soskin, M.S., and Khairetdinov, K.A. see Bazhenov, V.Yu.
Tassicker, O.J. Determination of the complex dielectric constant, electric field and conductivity at the boundary of ionised gas A p45
A e103
Tavakoli Darkani, M., and Bhattacharyya, B.B. Generation and design of canonic grounded-capacitor variable-frequency *RC*-active oscillators G p153 G e224
Tawel, N., Brush, R.J.H., and Baylis, P.E. see Brush, R.J.H.
Taylor, D.G., Wood, I.C., Mudd, M.S.J., Ward, P.J., and Saul, P.H. see Wood, I.C.
Taylor, P.D., Findlay, W.J., and Denyer, R.T. High-voltage high-current GTO thyristors I p238
Taylor, R.I., Abram, R.A., Burt, M.G., and Smith, C. Auger recombination in a quantum-well-heterostructure laser J p364
Teodoridis, V., Sphicopoulos, T., and Gardiol, F.E. see Sphicopoulos, T.
Theaker, C.J., Morris, D., Phillips, R., and Love, W.R. see Morris, D.
Thorpe, W., and Helszajn, J. see Helszajn, J.
Thylén, L., Sjöberg, P., and Lindqvist, G.E. Electro-optical serrodyne frequency translator for $\lambda = 1.3$ μm J p119
Tinga, W.R., Turner, R.F.B., Voss, W.A.G., and Baltes, H.P. see Turner, R.F.B.
Tipping, D., and Hesmondhalgh, D.E. see Hesmondhalgh, D.E.
Titchener, M.R. Construction and properties of the augmented and binary-depletion codes E p163
Tomizawa, K., Awano, Y., Hashizume, N., and Kawashima, M. Simulation of near ballistic electron transport in a submicron GaAs diode with $Al_xGa_{1-x}As/GaAs$ heterojunction cathode I p37
Tomkins, J.W., Brothers, J.S., and Williams, J.S. see Brothers, J.S.
Tomlinson, G.M., Keefe, D., Wellings, A.J., and Wand, I.C. see Keefe, D.
Tong, K.Y. Study of saturation conduction in short-channel MOS transistors by numerical simulation I p173
Tooke, A.O. Hot-pressed polycrystalline yttrium iron garnet for microwave loss investigations H p267
Torelli, F., Brucoli, M., and Trovato, M. see Brucoli, M.
Torelli, G., Maloberti, F., Montecchi, F., and Halász, E. see Maloberti, F.
Totton, K.A.E. Review of built-in test methodologies for gate arrays E/I p121
Tourassis, V.D., and Neuman, C.P. Robust nonlinear feedback control for robotic manipulators D p134
Townsend, B.S. Address as Chairman of the IEE Power Division: Distribution—the years of change C p1
Tranduc, H., Sanchez, J.L., Gharbi, M., and Rossel, P. see Sanchez, J.L.
Trayner, B.T. Introduction to the noninertial quality rate gyroscope and its applications J p255
Tredgold, R.H., Young, M.C.J., Hodge, P., and Hoorfar, A. Gas sensors made from Langmuir-Blodgett films of porphyrins I p151
Trovato, M., Brucoli, M., and Torelli, F. see Brucoli, M.
Truong, T.K., and Reed, I.S. see Reed, I.S.
Trzaska, Z.W. The inverse problem to matrix polynomial factorisation and its application to circuit design G p221
Tsdaka, A. Resistance between row and column terminals in a uniform resistor matrix G p165
Tsiboukis, T.D. Estimation of the characteristic impedance of a transmission line by variational methods H p171
Tsitsovits, A.J., and Freris, L.L. A statistical method for optimising wind power contribution in a diesel supplied network C p269
Talaf, A.L. Theory of arc resistance of solid dielectrics A p291
Tsutsui, K., Yoneda, S., and Fukui, Y. see Yoneda, S.
Tsutsumi, T., Hara, M., Yashima, M., and Akazaki, M. see Hara, M.
Tuffs, P.S., and Clarke, D.W. Self-tuning control of offset: a unified approach D p100
Turner, P.J., Macdonald, D.C., and Reece, A.B.J. see Macdonald, D.C.
Turner, R.F.B., Voss, W.A.G., Tinga, W.R., and Baltes, H.P. Eigenfrequency distributions in multimode cavities H p82
Tzou, K.-H., and Morgan, N.P. A fast pipelined DFT processor and its programming considerations G p273

U

Unbehauen, R., and Cichocki, A. see Cichocki, A.
Uriola Sereno, J.J., Davies, A.E., and German, D.M. see Davies, A.E.
Urquart, W.P., and Laybourn, P.J. Effective core area for stimulated Raman scattering in single-mode optical fibres J p201
Uttam, D., Al-Chalabi, S.A., Culshaw, B., Davies, D.E.N., and Giles, I.P. see Al-Chalabi, S.A.
Uttam, D., and Culshaw, B. Semiconductor lasers in advanced interferometric optical-fibre sensors J p184

V

Van Dell, W.R., Yilmaz, H., Chen, L.-S., Benjamin, J., Chang, M., and Owyang, K. see Yilmaz, H.
Van Hoi, Pham, Manko, M.A., Makhsudov, B.I., and Mikaelyan, G.T. see Manko, M.A.
van Rhyn, P., and Bredenkamp, G.L. see Bredenkamp, G.L.
van Wyk, J.D., van der Broeck, H.W., and Schoeman, J.J. see van der Broeck, H.W.
van der Broeck, H.W., van Wyk, J.D., and Schoeman, J.J. On the steady-state and dynamic characteristics of bipolar transistor power switches in low-loss technology B p251
Vardaxoglou, J.C., and Parker, E.A. see Parker, E.A.
Vasiljević, D.M. Nonlinear analysis of a quartz multivibrator with a complementary switch G p33
Velašević, D.M. Automatic determination of overlay structures E p278
Velazco, R. Fault localisation when testing complex circuits G p241
Velo, C., Mahdavi, J., Schaeffer, A., Bompa, L., and Gatellet, J. see Mahdavi, J.
Verrazzani, L., Corsini, G., Dalle Mese, E., and Marchetti, G. see Corsini, G.
Vijh, A.K., Dimoff, K., and Antoine, P. see Dimoff, K.
Viktorovitch, P., and Bonnaud, O. see Bonnaud, O.
Virk, G.S. Runge Kutta method for delay-differential systems D p119
Vitols, R., Murphy, B.J.M., Wray, G.R., Baker, J.E., and King, T.G. Development of computer-controlled machinery for the making up of garments D p178
Vlach, M. LU decomposition and forward-backward substitution of recursive bordered block diagonal matrices G p24
Voglis, E.E., and Olver, A.D. Shaped dual-offset antenna with dielectric cone feed for DBS reception H p110
Voss, W.A.G., Turner, R.F.B., Tinga, W.R., and Baltes, H.P. see Turner, R.F.B.
Vovos, N., Galanos, G.G., and Giannakopoulos, G. see Galanos, G.G.

W

Wada, M., Hamada, K., Shimizu, H., Kume, M., Tajiri, F., Itoh, K., and Kano, G. High-power lasers of the twin-ridge-substrate type J p3
Wade, C.A., Dakin, J.P., and Haji-Michael, C. see Dakin, J.P.
Walker, B.A., Smith, R.A., Hanbury-Brown, R., Mould, A.J., and Ward, A.G. see Smith, R.A.
Walker, P., Davies, J.T., and Nuttall, K.I. A numerical analysis of the resurf diode structure I p285
Wall, D.J.N., Bates, R.H.T., and Yeo, T.S. see Bates, R.H.T.
Wallace, A.M. Feature determination and inexact matching of images of industrial components E p309
Walther, R.G., Williams, T.W., Bottorff, P.S., and Das Gupta, S. see Williams, T.W.
Walton, A.J., Analouei, A.R., and Burrow, N.G. see Analouei, A.R.
Walton, S.J., and Boys, J.T. see Boys, J.T.
Wand, I.C., Keefe, D., Tomlinson, G.M., and Wellings, A.J. see Keefe, D.
Wang, J.J.H. General method for the computation of radiation in stratified media H p58
Wang, N., Wilson, A., and Jackson, R.J. see Wilson, A.
Wang, S., Baribaud, M., Dubois, F., and Floyrac, R. see Baribaud, M.
Ward, A.G., Smith, R.A., Hanbury-Brown, R., Mould, A.J., and Walker, B.A. see Smith, R.A.
Ward, C.R., Robson, A.J., Hargrave, P.J., and McWhirter, J.G. Application of a systolic array to adaptive beamforming F e110
Ward, J.S., McCanny, J.V., and McWhirter, J.G. Bit-level systolic array implementation of the Winograd Fourier transform algorithm F p473
Ward, P.J., Wood, I.C., Mudd, M.S.J., Taylor, D.G., and Saul, P.H. see Wood, I.C.
Warren, R.H.J., and Williams, A. see Williams, A.
Waters, W.E., Electrical induction from distant current surges A p94
Watson, A.W., and Wilkinson, D.R. see Wilkinson, D.R.
Watts, S. Radar detection prediction in sea clutter using the compound *K*-distribution model F p613
Webb, P.W., de Cogan, D., and Howe, A.F. see de Cogan, D.
Weedy, B.M. DC conductivity of Voltalit epoxy spacers in SF_6 A p450
Welch, K.A. Vampire—a proven capability in tactical direction finding F p283
Wellings, A.J., Keefe, D., Tomlinson, G.M., and Wand, I.C. see Keefe, D.
West, J.C. Address as President of the IEE: Forty years in control A p1
Westbrook, L.D., Nelson, A.W., and Fiddyment, P.J. see Nelson, A.W.

Weston, R.H., Gascoigne, J.D., and Sumpter, C.M. Intelligent interfaces for robots **D** p168
Wheeler, C.B. Influence of space charge on field emission of electrons from spherical points **A** p104
White, P.D., Gurcan, M.K., and MacNamee, R.J.G. 900 MHz digital cordless telephone **F** p425
Whittall, N.J. Signal sorting in ESM systems **F** p226
Wilbur, S.R., and Kirstein, P.T. The Universe Catenet; its protocols and lessons **E** p189
Wilcox, D.J., and Conlon, M. Induction from underground power circuits into parallel communication services **C** p76
Wilkins, D.R.J., Burgess, N., Damper, R.I., and Shaw, S.J. see Burgess, N.
Wilkinson, D.R., and Watson, A.W. Use of metric techniques in ESM data processing **F** p229
Willey, T., Chapman, R., Yoho, H., Durrani, T.S., and Preis, D. Systolic implementations for deconvolution, DFT and FFT **F** p466
Williams, A., and Warren, R.H.J. Method of using data from computer simulations to test protection equipment **C** e29
Williams, J.S., Brothers, J.S., and Tomkins, J.W. see Brothers, J.S.
Williams, S. Direct drive system for an industrial robot using a brushless DC motor **B** p53
Williams, S.J. Frequency response multivariable control of robotic manipulators **D** p144
Williams, T.W., Walther, R.G., Bottorff, P.S., and Das Gupta, S. Experiment to investigate self-testing techniques in VLSI **G** p105
Williamson, A.C., and Al-Khalidi, K.M.S. Starting of convertor-fed synchronous machine drives **B** p209
Williamson, A.G. Coaxially fed hollow probe in a rectangular waveguide **H** p273
Williamson, S., and Begg, M.C. Calculation of the bar resistance and leakage reactance of cage rotors with closed slots **B** p125
Williamson, S., and Laithwaite, E.R. Generalised harmonic analysis for the steady-state performance of sinusoidally-excited cage induction motors **B** p157
Wilson, A., Jackson, R.J., and Wang, N. Discharge detection techniques for stator windings **B** p234
Wilson, H., Roddy, D.J., and Irwin, G.W. see Roddy, D.J.
Wilson, L.A., Bradley, D.A., and Morfee, P.J. see Bradley, D.A.
Wilson, N.D., and Rappaport, S.S. Cellular mobile packet radio using multiple-channel CSMA **F** p517
Winterbone, D.E., Kidd, P.T., and Munro, N. see Kidd, P.T.
Wolfe, S.V., Barnes, S.R., and Riley, S.P. see Barnes, S.R.
Wolff, I., and Beyer, A. see Beyer, A.
Wong, K.P., Humpage, W.D., Nguyen, T.T., and Ho, K.K.K. Dynamic load model synthesis **C** p179
Wong, K.P., Humpage, W.D., Nguyen, T.T., and McLoughlin, J.M. see Humpage, W.D.
Wong, K.P., Humpage, W.D., and Nguyen, T.T. see Humpage, W.D.
Wong, N.F., Gott, G.F., and Barclay, L.W. HF spectral occupancy and frequency planning **F** p548
Wong, W.Y., Li, H.F., Chan, F.H.Y., Poon, P.W.F., Yan, W.F., and Hwang, J.C. see Li, H.F.
Wood, I.C., Mudd, M.S.J., Taylor, D.G., Ward, P.J., and Saul, P.H. Design techniques for a 565/680 Mbit/s coder/decoder **E/I** p68
Woodward, J.L., Elder, J.M., and Boys, J.T. see Elder, J.M.
Wooller, D. System considerations for naval ESM **F** p212
Wray, G.R., Vitols, R., Murphy, B.J.M., Baker, J.E., and King, T.G. see Vitols, R.
Wright, G.T. Simple and continuous MOSFET models for the computer-aided design of VLSI **I** p187
Wu, C.C. Test point selection methods for the self-testing based analogue fault diagonosis system **G** p173 **G** e302
Wu, W.Y., Allan, J., and Mellitt, B. see Allan, J.

X

Xie, G., and Ramshaw, R.S. see Ramshaw, R.S.

Y

Yacamini, R., and Taalab, A.I. Effect of AC system impedance on the regulation and, hence, the stability margin of HVDC schemes **C** p202
Yak, Y.W., Dillon, T.S., and Forward, K.E. Bounded-set approach to the evaluation of the reliability of fault-tolerant systems. Part 1: methodology, powered spares **E** p217
Yak, Y.W., Dillon, T.S., and Forward, K.E. Bounded-set approach to the evaluation of the reliability of fault-tolerant systems. Part 2: unpowered spares, nonconstant failure rate, non-aggregatable systems **E** p224
Yamamoto, H., Sawa, K., and Miyachi, K. see Sawa, K.
Yamamoto, K., Yokoyama, S., and Kinoshita, H. see Yokoyama, S.
Yamani, A., and Bennett, J.C. Depth-of-field improvements and removal of distortion in long wavelength imaging systems **F** p149
Yan, W.F., Li, H.F., Chan, F.H.Y., Poon, P.W.F., Wong, W.Y., and Hwang, J.C. see Li, H.F.
Yang, Q.S., and Morrison, I.F. Microprocessor-based algorithm for high-resistance earth-fault distance protection **C** d94
Yarman, B.S. Modern approaches to broadband matching problems **H** p87
Yashima, M., Hara, M., Tsutsumi, T., and Akazaki, M. see Hara, M.
Ydstie, B.E., and Co, T. Recursive estimation with adaptive divergence control **D** p124
Yeo, T.S., Bates, R.H.T., and Wall, D.J.N. see Bates, R.H.T.
Yeung, W.K., and Evans, S. Time-domain microwave target imaging **H** p345
Yichao, Wang, and O'Reilly, J.J. see O'Reilly, J.J.
Yilmaz, H., Chen, L.-S., Van Dell, W.R., Benjamin, J., Chang, M., and Owyang, K. 50 A 1200 V *n*-channel IGT **I** p261
Yoho, H., Willey, T., Chapman, R., Durrani, T.S., and Preis, D. see Willey, T.
Yokoyama, S., Yamamoto, K., and Kinoshita, H. Analogue simulation of lightning induced voltages and its application for analysis of overhead-ground-wire effects **C** p208
Yoneda, S., Tsutsui, K., and Fukui, Y. Wideband echo suppression using an improved bilateral opto-isolator circuit **F** p153
Yoshikuni, Y., Kawaguchi, H., and Ikegami, T. Intensity fluctuation of 1.5 μm InGaAsP/InP distributed feedback lasers involving the optical feedback effect **J** p20
Young, M.C.J., Tredgold, R.H., Hodge, P., and Hoorfar, A. see Tredgold, R.H.
Youngquist, R.C., Brooks, J.L., Risk, W.P., Kino, G.S., and Shaw, H.J. All-fibre components using periodic coupling **J** p277
Yu, P.K., and Luk, K.M. see Luk, K.M.
Yu, Ping-Kong, and Luk, Kwai-Man see Luk, Kwai-Man
Yun, S.W., and Itoh, T. Nonreciprocal wave propagation in a hollow image guide with a ferrite layer **H** p222
Yung, E.K.-N. An innovative analysis of earthing grids for power substations **C** p251

Z

Zakzouk, A.K.M., El-Shobokshy, M.S., and Mujahid, A. see El-Shobokshy, M.S.
Zhan, Q., and Hammond, P. see Hammond, P.
Zhao-yin, L., Shou-wu, W., Quan-sheng, Z., and Rong-han, W. see Shou-wu, W.
Zinober, A.S.I. Accuracy of time-optimal control of the diffusion equation using a spatial discretisation technique **D** p239

Addresses

Finkelstein, L. Address as Chairman of the IEE Management & Design Division: By our work is the city established **A** p9
Fishwick, W. Address as Chairman of the IEE SW Centre: Engineers of quality, needed certainly, but deserved, perhaps **A** p181
Freeman, E.M. Address as Chairman of the IEE Science, Education & Technology Division: All SET for CAE **A** p15
Rudge, A.W. Address of Chairman of the IEE Electronics Division: Sky-hooks, fish-warmers and hub-caps; milestones in satellite communications **F** p1
Shortland, M.G. Address as Chairman of the IEE Computing & Control Division: The integration of computing and control **E** p1
Townsend, B.S. Address as Chairman of the IEE Power Division: Distribution—the years of change **C** p1
West, J.C. Address as President of the IEE: Forty years in control **A** p1

Guide to Subject Index

Acoustics (*see* Acoustoelectric effects and Sound broadcasting and audio)
Acoustoelectric effects
Active networks
Actuators (*see* Transducers)
Adaptive control
Algebra (incl. Matrix algebra) (*see* Mathematical techniques)
Algorithms (*see* Mathematical techniques)
Amplifiers
Analogue computers and computation
Analogue-digital conversion
Antennas
Antennas (active)
Antennas (adaptive)
Antennas (aperture)
Antennas (arrays)
Antennas (dipole)
Antennas (frequency inpendent)
Antennas (horns and feeds)
Antennas (measurements)
Antennas (microstrip)
Antennas (millimetre wave)
Antennas (reflectors)
Antennas (slot)
Antennas (theory)
Antennas (time domain)
Antennas (travelling wave)
Antennas (wire)
Arcing
Attenuators (*see* Instrumentation and measuring science)
Audio (*see* Sound broadcasting and audio)
Avionics
Batteries and cells
Biological effects
Biomedical applications
Bipolar transistors
Boolean algebra (*see* Logic)
Breakdown and gas discharges
Cables and overhead lines (*see* Coaxial cables)
Calibration (*see* Instrumentation and measuring science)
Charge-coupled devices
Choppers (*see* Control equipment and applications)
Circuit breakers and circuit breaking
Circuit theory and design
Closed-loop systems
Coaxial cables (*see* Cables and overhead lines)
Coaxial components
Codes and decoding
Commutation
Components
Computer applications
Computer graphics
Computer simulation
Computer-aided design
Conductors and conductivity
Control equipment and applications
Control systems
Control theory
Convertors
Cybernetics and robotics
Decoding (*see* Codes and decoding)
Delay lines
Demodulation (*see* Modulation)
Detection
Dielectric materials
Digital arithmetic (*see* Digital computers and computation)
Digital circuits
Digital communication systems
Digital computers and computation
Digital control (*see* Digital computers and computation)
Digital instrumentation (*see* Instrumentation and measuring science)
Diodes
Discharges, electric (*see* Arcing)
Discharges, gas (*see* Breakdown and gas discharges)
Distribution networks (*see* Power transmission)
Doping
Earthing (*see* System protection)
Eddy currents
Education and training
Electric shock (*see* Hazards)
Electromagnetic theory
Electron devices
Electronic circuits (*see* Circuit theory and design)
Energy conversion and storage
Engineering administration and management
Epitaxy
Errors and error analysis
Fault location
Feedback
Ferrites and ferromagnetics
Ferromagnetics (*see* Ferrites and ferromagnetics)
Fibres, optical (*see* Optics)
Field-effect transistors
Filters and filtering
Fuel cells (*see* Batteries and cells)
Generators
Graph theory and topology
Gunn devices
Hazards
History (*see* Reviews of progress)
Holography (*see* Optics)
Hysteresis
Image processing
Induction motors
Industrial applications of power (*see* Power utilisation and industrial applications)
Information and communication theory
Instrumentation and measuring science
Insulators and insulation
Integrated circuits (*see* Circuit theory and design)
Integrated optics (*see* Optics)
Interface states
Interference (*see* Noise and interference)
Inverters (*see* Power electronics)
Ionisation (*see* Breakdown and gas discharges)
Ionospheric propagation (*see* Radio-wave propagation)
Lasers
Lighting
Lightning and lightning protection
Linear motors
Linear networks (*see* Networks)
Load and voltage regulation
Logic
Magnetic devices and properties
Magnetic fields
Mathematical techniques
Matrix algebra (*see* Mathematical techniques)
Measurement and measuring (*see* Instrumentation and measuring science)
Metal-insulator-semiconductor structures
Metal-oxide-semiconductor structures
Microprocessors
Microscopes
Microstrip and stripline
Microwave active components
Microwave circuits and networks
Microwave communications
Microwave heating
Microwave integrated circuits
Microwave measurements
Microwave passive components
Microwave systems
Microwave tubes
Millimetre wave devices and components
Modelling (*see* Simulation)
Modulation
Motors (*see* Induction motors, Linear motors, Reluctance motors, Stepping motors, Synchronous motors)
Motors, induction (*see* Induction motors)
Motors, linear (*see* Linear motors)
Motors, reluctance (*see* Reluctance motors)
Motors, stepping (*see* Stepping motors)
Motors, synchronous (*see* Synchronous motors)
Multivariable control systems (*see* Control equipment and applications)
Natural resources
Networks (*see* Telephone exchanges and networks)
Noise and interference
Nonlinear systems
Numerical analysis
Optical fibres (*see* Optics)
Optical processing (*see* Signal processing and optics)
Optical systems (*see* Optics)
Optical transmission (*see* Optics)
Optics
Optimal control
Optimisation
Optoelectronics
Oscillators (*see* Semiconductor devices and materials)
Overhead lines (*see* Cables and overhead lines)
Overvoltages (*see* System protection)
Pattern recognition (*see* Picture processing and pattern recognition)
Perturbation theory
Phasing and phase control
Physical properties
Picture processing and pattern recognition
Plasmas
Poles and zeros
Polynomials (*see* Mathematical techniques)
Power conversion (*Ses* Transformers)
Power electronics
Power system protection (*see* System protection)
Power systems and plant
Power transmission and distribution (*see* Transmission and distribution plant)
Power utilisation and industrial applications
Process control (*see* Control theory)
Production engineering (*see* Project and production engineering)
Project and production engineering (*see* Engineering administration and management)
Propogation in random media
Pulse-code modulation
Quantum electronics
Radar and radionavigation
Radiation
Radio astronomy
Radio waves (*see* Radio-wave propagation)
Radio-wave propagation (ground wave)
Radio-wave propagation (ionospheric)
Radio-wave propagation (microwave)
Radio-wave propagation (millimetre wave)
Radio-wave propagation (terrain effects)
Radio-wave propagation (tropospheric)
Radiocommunication
Radionavigation (*see* Radar and radionavigation)
Radomes
Railway electrification and transportation
Receivers
Relays (*see* System protection)
Reliability
Reluctance motors
Remote sensing
Reviews of progress
Robotics (*see* Cybernetics and robotics)
Satellite links and space communication
Schottky-barrier devices
Semiconductor devices and materials (*see* Diodes, Thyristors and Transistors)
Semiconductor lasers
Servomotors
Signal processing
Simulation
Solar cells (*see* Energy conversion and storage)
Sonics and ultrasonics
Sound broadcasting and audio
Space communication (*see* Satellite links and space communication)
Speech synthesis
Stabilisers (*see* Stability)
Stability
Standardisation and standards
Stepping motors
Submillimetre systems
Superconductivity
Surface-acoustic-wave devices (SAW)
Switches and switching theory
Switchgear
Synchronous generators (*see* Generators)
Synchronous motors
System protection
Telecommunication (*see* Radiocommunication)
Telecommunication traffic (*see* Telecommunication)
Telemetry
Telephone exchanges and networks
Telephony
Teletext
Television
Thyristors (*see* Semiconductor devices and materials)
Topology (*see* Graph theory and topology)
Torque (*see* Motors)
Traction (*see* Railway electrification and transportation)
Transducers
Transformers
Transients
Transistors (*see* Semiconductor devices and materials)
Transmission and distribution plant (*see* Power transmission and distribution)
Transmission lines
Transmitters
Transportation (*see* Vehicles and transportation)
Tropospheric propagation (*see* Radiowave propagation)
Turbogenerators (*see* Generators)
Ultrasonics (*see* Sonics and ultrasonics)
Underground cables (*see* Cables and overhead lines)
Vehicles and transportation
Very large scale integration
Vibration
Vocoders (*see* Voice communication)
Voice communication
Voltage regulators (*see* Load and voltage regulation)
Waveguides and waveguide components
Wind power (*see* Energy conversion and storage)
X-rays

Lectures

Anderson, A.F. William Henley, pioneer electrical instrument maker and cable manufacturer, 1813 to 1882 **A** p249
Freeman, C. The economics of innovation **A** p213
Hawkins, A.D. The changing technology of electronic components and assemblies **A** p311
O'Hara, S. The evolution of a modern telecommunications network to the year 2000 and beyond **A** p467

IEE commissioned reviews

Midwinter, J.E. 'Light' electronics, myth or reality? **J** p371
Pitt, G.D., Extance, P., Neat, R.C., Batchelder, D.N., Jones, R.E., Barnett, J.A., and Pratt, R.H. Optical-fibre sensors **J** p214

Subject index

Adaptive control of arterial oxygen pressure of newborn infants under incubator oxygen treatments. A. Sano and M. Kikucki **D** p205
Full-wave computed tomography Part 4: Low-frequency electric current CT. A.D. Seagar and R.H.T. Bates **A** p455
Near-field power transfer effects in small electromagnetic applicators for inducing hyperthermia. A. Henderson and J.R. James **H** p189
Smith predictor and self-tuning control of muscle-relaxant drug administration. D.A. Linkens, M. Menad and A.J. Asbury **D** p212
Tomographic image reconstitution of objects from multi-incidence microwave exploration. M. Baribaud, F. Dubois, R. Floyrac and S. Wang **H** p286

ACOUSTICS

Spatial heterodyning of the output signal from an acousto-optic correlator. C. Daniel **J** p101

ACTIVE NETWORKS

Generation and design of canonic grounded-capacitor variable-frequency *RC*-active oscillators. M. Tavakoli Darkani and B.B. Bhattacharyya **G** p153 **G** e224

ADAPTIVE CONTROL

Adaptive model following control of plants with nonlinearities of known form. G. Ambrosino, G. Celentano and F. Garofalo **D** p11
Recursive estimation with adaptive divergence control. B.E. Ydstie and T. Co **D** p124

ALGORITHMS

A fast pipelined DFT processor and its programming considerations. K.-H. Tzou and N.P. Morgan **G** p273
A new algorithm for a nonlinear multicriteria decision-making problem. P.V. Rao, T.C. Kong and V.V. Sastry **C** p118
Application of efficient linear FM matched filtering algorithms to synthetic aperture radar processing. M. Sack, M.R. Ito and I.G. Cumming **F** p45
Bit-level systolic array implementation of the Winograd Fourier transform algorithm. J.S. Ward, J.V. McCanny and J.G. McWhirter **F** p473
Comparative study of polar and Cartesian co-ordinate algorithms for power-system state-estimation problems. A. Keyhani and A. Abur **C** p132
Computationally efficient IV algorithm for structure and parameter identification of linear systems. M.S. Ahmed **D** p37
Identification of linear systems with input and output noise: the Koopmans-Levin method. K.V. Fernando and H. Nicholson **D** p30
LU decomposition and forward-backward substitution of recursive bordered block diagonal matrices. M. Vlach **G** p24
Test point selection methods for the self-testing based analogue fault diagonosis system. C.C. Wu **G** p173 **G** e302
The mismatch theorem and second-order load-flow algorithms. W. Hubbi **C** p189

AMPLIFIERS

A theoretical basis for practical amplifier design using cascaded operational amplifiers. D.J. Comer **G** p161
Generation and design of canonic grounded-capacitor variable-frequency *RC*-active oscillators. M. Tavakoli Darkani and B.B. Bhattacharyya **G** p153 **G** e224
Optimised travelling-wave amplifier with two parallel-gate transmission lines. U. Christ and F. Arndt **I** p140

ANALOGUE-DIGITAL CONVERSION

A digital dual-slope analogue to digital convertor. H. Jamal and F.E. Holmes **G** p149

ANTENNAS

An alternative formulation for an optimum beamformer with robustness capability. M.H. Er and A. Cantoni **F** p447
Antenna adaptivity by direction finding and null steering. J.E. Hudson **H** p307
Antenna systems for ESM applications—a land-mobile example. R.J. Chignell **F** p252
Application of a systolic array to adaptive beamforming. C.R. Ward, A.J. Robson, P.J. Hargrave and J.G. McWhirter **F** e110
Electronic support measures (Editorial). P.W. East and J.L. Everett **F** p205
Empirical observations of a sonar adaptive array. A.C. Smith and G.C.L. Searle **F** p595
Fraunhofer interference of a dielectric interface with travelling wave radiation and the consequent reduction in dielectric waveguide bending loss. P.C. Kendall, J.H. Marsh, P.N. Robson and R.C. Hewson-Browne **J** p354
On the efficient evaluation of integrals arising in the Sommerfeld halfspace problem. K.A. Michalski **H** p312
Sky-hooks, fish-warmers and hub-caps; milestones in satellite communications. A.W. Rudge **F** p1
Spiral antennas for ESM. T.E. Morgan **F** p245
Theory of arc resistance of solid dielectrics. A.L. Tslaf **A** p291

ANTENNAS (ADAPTIVE)

An efficient algorithm for antenna synthesis updating following null-constraint changes. M.A. Magdy, F.J. Paoloni and J.Y.C. Cheah **H** p339
Array pattern synthesis by the method of alternating orthogonal projections: the general case. T.S. Ng **H** p451
Decomposition of antenna signals into plane waves. J.E. Hudson **H** p53

ANTENNAS (ARRAYS)

A spectral iteration technique for the analysis of Yagi-Uda arrays. S.A. Bokhari and N. Balakrishnan **H** p198
Analysis and design of double-layer frequency-selective surfaces. F. Stefan Johansson **H** p319
Analysis of a horizontal two-element antenna array above a dielectric halfspace. K.A. Michalski, C.E. Smith and C.M. Butler **H** p335
Decomposition of antenna signals into plane waves. J.E. Hudson **H** p53
Generalised array pattern synthesis using the projection matrix. T.S. Ng **H** p44
Optimising the synthesis of shaped beam antenna patterns. H.J. Orchard, R.S. Elliot and G.J. Stern **H** p63

ANTENNAS (DIPOLE)

A spectral iteration technique for the analysis of Yagi-Uda arrays. S.A. Bokhari and N. Balakrishnan **H** p198
Analysis of a horizontal two-element antenna array above a dielectric halfspace. K.A. Michalski, C.E. Smith and C.M. Butler **H** p335
Representation of the electromagnetic fields of a dipole above an inhomogeneous half space. A. Mohsen **H** p127
Vector potential of a vertical current element over a lossy ground. A. Karwowski and J. Szymańda **H** p326

ANTENNAS (HORNS AND FEEDS)

Dual-mode horns at millimetre and submillimetre wavelengths. G.A. Ediss **H** p215
Phase centre of small primary feeds and its effects on the feed performance. L. Shafai and A.A. Kishk **H** p207
Propagation and radiation behaviour of a longitudinally slotted horn with dielectric-filled slots. M.S. Aly and S.F. Mahmoud **H** p477
Quasioptical components for 230 GHz and 460 GHz. G.A. Ediss, Wang. S-J and N.J. Keen **H** p99

ANTENNAS (MEASUREMENTS)

Analysis of a horizontal two-element antenna array above a dielectric halfspace. K.A. Michalski, C.E. Smith and C.M. Butler **H** p335
Analysis of phase errors in antenna-measurements applications to phase-pattern corrections and phase-centre determination. P.A. Beeckman **H** p391
Design and validation of a corrective subreflector for a 13.7 m antenna by microwave holography. M.F. Godwin, F.B.N. Henchy and W.N. Marshall **H** p447

ANTENNAS (MICROSTRIP)

General integral equation formulation for microstrip antennas and scatterers. J.R. Mosig and F.E. Gardiol **H** p424
Generalised transmission line model for microstrip patches. A.K. Bhattacharyya and R. Garg **H** p93
Input impedance of a probe excited circular microstrip ring antenna. A. Das and S.K. Das **H** p384
Moment-method solution of the near-field distribution and far-field patterns of microstrip antennas. Y. Lin and L. Shafai **H** p369
Near-field power transfer effects in small electromagnetic applicators for inducing hyperthermia. A. Henderson and J.R. James **H** p189
Radiation characteristics and polarisation of undulated microstrip line antennas. L. Shafai and A.A. Sebak **H** p433
Theory and experiment on microstrip antennas with airgaps. J.S. Dahele and K.F. Lee **H** p455

ANTENNAS (REFLECTORS)

Analysis and design of double-layer frequency-selective surfaces. F. Stefan Johansson **H** p319
Design and validation of a corrective subreflector for a 13.7 m antenna by microwave holography. M.P. Godwin, F.B.N. Henchy and W.N. Marshall **H** p447
Equivalent-circuit models for frequency-selective surfaces at oblique angles of incidence. C.K. Lee and R.J. Langley **H** p395
General design of two-reflector antennas. S. Cornbleet **H** p47
Optimisation of contoured beams for satellite antennas. P.D. Patel and K.K. Chan **H** p400
Plane-wave illumination of concentric-ring frequency-selective surfaces. E.A. Parker and J.C. Vardaxoglou **H** p176
Recent developments in the analysis of reflector antennas. A review. G. Franceschetti and A. Mohsen **H** p447
Shaped dual-offset antenna with dielectric cone feed for DBS reception. E.E. Voglis and A.D. Olver **H** p110
Single-layer multiband frequency-selective surfaces. C.K. Lee, R.J. Langley and E.A. Parker **H** p411

ANTENNAS (SLOT)

Analysis of slot antenna on dielectric substrate. A. Nešic and B.D. Popović H p474

ANTENNAS (THEORY)

A spectral iteration technique for the analysis of Yagi-Uda arrays. S.A. Bokhari and N. Balakrishnan H p198
General design of two-reflector antennas. S. Cornbleet H p47
General method for the computation of radiation in stratified media. J.J.H. Wang H p58
Generalised array pattern synthesis using the projection matrix. T.S. Ng H p44
Optimising the synthesis of shaped beam antenna patterns. H.J. Orchard, R.S. Elliot and G.J. Stern H p63
Plane-wave illumination of concentric-ring frequency-selective surfaces. E.A. Parker and J.C. Vardaxoglou H p176
Some extensions of the concept of complementary electromagnetic structures. B.D. Popović and A. Nešić H p131
Towards an algorithm for dielectric-edge diffraction coefficients. R.H.T. Bates, T.S. Yeo and D.J.N. Wall H p461
Vector potential of a vertical current element over a lossy ground. A. Karwowski and J. Szymańda H p326

ANTENNAS (WIRE)

Antenna pattern degradation due to tower guy wires on microwave radio systems. W.S. Davies, S.J. Hurren, E.D.S. Fall and P.R. Copeland H p181
Low-frequency approach to the problem of a vertical wire antenna above an imperfect ground. A. Karwowski H p123
On the distribution of current on a straight wire antenna. N. Kalyanasundaram H p407

ARCING

Analysis of the arc formed along the surface of a flat plate immersed in a laminar flow of gas. S. Au, J. Santiago and P.R. Smy A e263
Electric field measurements in long gap discharge using Pockels device. K. Hidaka and Y. Murooka A p139
Statistical analysis of electric-arc-furnace parameter variations. J.D. Lavers and B. Danai C p82

AVIONICS

Experimental analysis of an innovations-based detection algorithm for surveillance radar. P.A.S. Metford and S. Haykin F p18

BATTERIES AND CELLS

Nicholas Callan — priest, professor and scientist. M.T. Casey A p491

BIPOLAR TRANSISTORS

Modelling of a new high current gain bipolar transistor with *n*-doped hydrogenated silicon emitter. O. Bonnaud and P. Viktorovitch I p17

BOOLEAN ALGEBRA

Binary-decision graphs for implementation of Boolean functions. M. Silva and R. David E p175

BREAKDOWN AND GAS DISCHARGES

Analysis of the arc formed along the surface of a flat plate immersed in a laminar flow of gas. S. Au, J. Santiago and P.R. Smy A e263
Determination of the complex dielectric constant, electric field and conductivity at the boundary of ionised gas. O.J. Tassicker A p45 A e103
Effects of enhanced heating by surface oxides on arc cathodes. K. Dimoff, P. Antoine and A.K. Vijh A p301
Electrification current and voltage on a cylindrical object in the presence of an ion flow field in an air stream. M. Hara, M. Yashima, T. Tsutsumi and M. Akazaki A p59
The effect of atmospheric humidity on the corona extinction voltage of circular cylinders. J. Rungis A p136

CABLES AND OVERHEAD LINES

Marx circuit modified by adding a tail sphere gap to generate lightning impulses lasting a few microseconds. A. Carrus A p40
Sensitivity analysis of lightning performance calculations for transmission lines and substations. M.S. Savic C p217

CALIBRATION

Nickel and chromium plated terminals in current transformer circuits. P.J. Betts A p178

CHARGE-COUPLED DEVICES

Operation of a single-phase CCD on GaAs at 560 MHz. A.J. Hayes, J.T. Davies and W. Eccleston I p34

CHOPPERS

A gate-turn-off thyristor chopper for traction drives. J. Allan, B. Mellitt and W.Y. Wu B p245
Chopper control of DC disc-armature motor using power MOSFETs. R.J. Hill and P. Cork B p93
Computer-aided design of power electronic circuits. M.H. Pong and R.D. Jackson B p301
Filter design for multiphase DC choppers. M.H. Rashid and S.N. Bhadra B p77

CIRCUIT BREAKERS AND CIRCUIT BREAKING

New means of measuring current in the vicinity of zero in an AC circuit breaker. J. Mahdavi, A. Schaeffer, C. Velo, L. Bompa and J. Gatellet A p285

CIRCUIT THEORY AND DESIGN

A by-inspection analysis of SC networks using direct topological rules. J.J. Mulawka and G.S. Moschytz G p255
An improved delay lock loop for use in ranging and data modulated spread-spectrum systems. R.F. Ormondroyd and L.A.A. Al-Rawas G p291
Analytic design of constant delay switched-capacitor filters with amplitude selectivity. H. Baher G p281
Basic circuit structures for the synthesis of piecewise polynomial one-port resistors. A. Rueda, J.L. Huertas and A. Rodriguez-Vazquez G p123
Bilinear design of fully differential switched-capacitor ladder filters. F. Maloberti, F. Montecchi, G. Torelli and E. Halász G p266
Cascade realisation of the irrational immittance $s^{1/2}$. V. Ramachandran, C.S. Gargour and M. Ahmadi G p64
Compensative phase meter with lock-in detection. J. Siuzdak G p189 G e302
Design and characterisation of a very low current to frequency convertor. A. El-Hennawy, D. Borel and N. Saleh G p184 G e302
Design for testability (Editorial). R.G. Bennetts and M.A. Jack G p73
Design of finite-duration impulse response digital and charge-coupled device filters with arbitrary attenuation characteristics. H. Baher G p193 G e302
Design of finite-duration impulse/response digital and charge-coupled device filters with arbitrary attenuation characteristics. H. Baher G p103
Design of parasitic-insensitive four-phase wave SC filters. Keping Chen and S. Eriksson G p46
Design of precision switched-capacitor generalised integrators and their applications to the synthesis of nonlinear networks. A. Cichocki and R. Unbehauen G p225
Dual model of a DC machine with gyrators. R.S. Ramshaw and G. Xie B p57
Efficient tolerance analysis using control variates. R.S. Soin and P.J. Rankin G p131
Fault localisation when testing complex circuits. R. Velazco G p241
Faults and fault effects in NMOS circuits—impact on design for testability. N. Burgess, R.I. Damper, S.J. Shaw and D.R.J. Wilkins G p82
Generation and design of canonic grounded-capacitor variable-frequency *RC*-active oscillators. M. Tavakoli Darkani and B.B. Bhattacharyya G p153 G e224
High-resolution switched-capacitor algorithmic digital-to-analogue convertor. K. Nagaraj G p200
In situ study of electromigration by Joule displacement microscopy. Y. Martin I p9
Knowledge-based test generation. M.J. Schofield G p108
Nonlinear analysis of a quartz multivibrator with a complementary switch. D.M. Vasiljević G p33
On the realisation of asymmetric transmission zeros for crystal filter design. M.deP. Barros and L.F. Lind G p217
Parasitic insensitive GIC. C. Beesley and H. Rokos G p301
Phase adjustable channel selector circuit for the Gbit/s range. F. Lukanek and G. Heydt G p288
Reduction of threshold noise in FM receivers operating in quasisynchronous field. M.O. Al-Nuaimi F p94
Review of built-in test methodologies for gate arrays. K.A.E. Totton E/I p121
Small signal bias dependent model for high frequency transistors. K. Bharath Kumar I p201
Testability and self-test in NMOS and CMOS VLSI signal processors. A.F. Murray and P.B. Denyer G p93
The UK5000 array. B. Cosgrove G p90
The changing technology of electronic components and assemblies. A.D. Hawkins A p311
The inverse problem to matrix polynomial factorisation and its application to circuit design. Z.W. Trzaska G p221

CODES AND DECODING

Class of binary cipher sequences with best possible autocorrelation function. L.C. Quynh and S. Prasad F p576
Construction and properties of the augmented and binary-depletion codes. M.R. Titchener E p163
Converging ARQ schemes. J. Hsieh and B. Arazi F p84
Error-trellis syndrome decoding techniques for convolutional codes. I.S. Reed and T.K. Truong F p77

COMPONENTS

Analysis of armature circuit inductance of DC machines by FEM. K. Sawa, H. Yamamoto and K. Miyachi B p307
Asymptotes for boundary determined current density of PIN diodes. J. McGhee, I.A. Henderson and M. Saffari I p272
Economic designs for single-layer toroidal inductors. P.N. Murgatroyd and D. Belahrache B p315
Experimental 1 Mbit DRAM using power reduction techniques. K. Kimura, K. Itoh, R. Hori, J. Etoh and Y. Kawajiri I p23
The changing technology of electronic components and assemblies. A.D. Hawkins A p311

COMPUTER APPLICATIONS

A note on some computational aspects of the jump-resonance problem in 3-phase systems. S.N. Bhadra C p248
A sensory-based robotic safety system. J.H. Graham and J.F. Meagher D p183
All SET for CAE. E.M. Freeman A p15
Aspects of portability of the UNIX shell. D. Keefe, G.M. Tomlinson, A.J. Wellings and I.C. Wand E p257
Cluster analysis of power-system networks for array processing solutions. A.O.M. Saleh and M.A. Laughton C p172
Computer-aided thermal analysis of reverse-biased PIN diodes. V. Ramamurthy, K.N. Bhat and D. Kakati I d170
Decomposed load-flow algorithm suitable for parallel processor implementation. M. Rafian, M.J.H. Sterling and M.R. Irving C p281
Development of computer-controlled machinery for the making up of garments. R. Vitols, B.J.M. Murphy, G.R. Wray, J.E. Baker and T.G. King D p178
Experimental 1 Mbit DRAM using power reduction techniques. K. Kimura, K. Itoh, R. Hori, J. Etoh and Y. Kawajiri I p23
Fast numerical method for calculation of electric and magnetic fields based on potential-flux duality. P. Hammond, M.C. Romero-Fuster and S.A. Robertson A p84

Feature determination and inexact matching of images of industrial components. A.M. Wallace E p309
Full-wave computed tomography Part 4: Low-frequency electric current CT. A.D. Seagar and R.H.T. Bates A p455
Full-wave computed tomography. Part 3: Coherent shift-and-add imaging. R.A. Minard, B.S. Robinson and R.H.T. Bates A p50
Incorporation of large stochastic sources in the power system. A.K. David C p161
Reactive nonlinearities in transmission-line models. L.A. Newcombe and J.E. Sitch A p95
Response improvements in industrial DC drives derived from optimal analysis. B.J. Cardwell and C.J. Goodman B p171
Ring-protection mechanisms: general properties and significant implementations. G. Frosini and B. Lazzerini E p203
Some shifting methods for matrix multiplication. M.K. Stojčev, I.Ž. Milovanović and Ž.Č. Radonjić E p33
The integration of computing and control. M.G. Shortland E p1
The mismatch theorem and second-order load-flow algorithms. W. Hubbi C p189

COMPUTER GRAPHICS

Some shifting methods for matrix multiplication. M.K. Stojčev, I.Ž. Milovanović and Ž.Č. Radonjić E p33

COMPUTER SIMULATION

Accuracy of time-optimal control of the diffusion equation using a spatial discretisation technique. A.S.I. Zinober D p239
Comparison of five high speed bistables by computer simulation. D.M. Russ and D.W. Faulkner I p210
Computer modelling of the automotive energy requirements for internal combustion engine and battery electric-powered vehicles. J.R. Bumby, P.H. Clarke and I. Forster A p265
Computer simulation of holographic grating exposure. R.H.M. Dumas and P.J.R. Laybourn J p331
Computer-aided design of power electronic circuits. M.H. Pong and R.D. Jackson B p301
Efficient tolerance analysis using control variates. R.S. Soin and P.J. Rankin G p131
Method of using data from computer simulations to test protection equipment. A. Williams and R.H.J. Warren C e29
Pascal circuit compiler for UK5000. C.R. Jesshope E/I p116
Phase-variable modelling of saturated reactor compensators with particular reference to long-distance transmission. W.D. Humpage, K.P. Wong, T.T. Nguyen and J.M. McLoughlin C p237
Reactive nonlinearities in transmission-line models. L.A. Newcombe and J.E. Sitch A p95

COMPUTER-AIDED DESIGN

All SET for CAE. E.M. Freeman A p15
An I^2L clocked gate array for undergraduate design exercises. C.R. Jesshope and P. Ashburn E/I p54
Automated synthesis of digital circuits from RT-level description. S. Gai, M. Mezzalama and P. Prinetto E p265
Design for testability (Editorial). R.G. Bennetts and M.A. Jack G p73
Designing with programmable logic. M.J.P. Bolton E/I p73
Fault localisation when testing complex circuits. R. Velazco G p241
Knowledge-based test generation. M.J. Schofield G p108
Microprocessor-based development system for PWM variable-speed drives. S.R. Bowes and T. Davies B p18
STRICT: a design language for strongly typed recursive integrated circuits. R.H. Campbell, A.M. Koelmans and M.R. McLauchlan E/I p108
Simple and continuous MOSFET models for the computer-aided design of VLSI. G.T. Wright I p187
Testability and self-test in NMOS and CMOS VLSI signal processors. A.F. Murray and P.B. Denyer G p93
The Megacell concept: an approach to painless custom design. J.S. Brothers, J.W. Tomkins and J.S. Williams E/I p91
The UK5000 array. B. Cosgrove G p90
The integration of computing and control. M.G. Shortland E/I p1
Trends in the application of semiconductor technology. J.S. Arnold E/I p50

CONDUCTORS AND CONDUCTIVITY

DC conductivity of Voltalit epoxy spacers in SF_6. B.M. Weedy A p450
Multilayer analysis of electromagnetic systems incorporating layers of discrete conductors. E. Spooner B p72
Predetermination of lateral length to prevent overvoltage problems due to open conductors in three-phase systems. S. Prusty and M. Panda C p49

CONTROL EQUIPMENT AND APPLICATIONS

A decentralised control strategy for dynamic shunt VAr compensation in interconnected power systems. M. Brucoli, F. Torelli and M. Trovato C p229
A gate-turn-off thyristor chopper for traction drives. J. Allan, B. Mellitt and W.Y. Wu B p245
Adaptive control of arterial oxygen pressure of newborn infants under incubator oxygen treatments. A. Sano and M. Kikucki D p205
Adaptive microprocessor control of a linear helical reluctance motor. R.J.A. Paul, P.J. Fleming and A.M. Elsamahy B p106
An algorithm for observability determination in water-system state estimation. A. Bargiela D p245
Approaches to roll-loop design for BTT CLOS guidance. D.J. Roddy, G.W. Irwin and H. Wilson D p268
Chopper control of DC disc-armature motor using power MOSFETs. R.J. Hill and P. Cork B p93
Design of compensation schemes for a nonminimum-phase multivariable plant. P.T. Kidd, N. Munro and D.E. Winterbone D p75
Design of delayed control systems using Zakian's framework. A.T. Bada D p251
Filter design for multiphase DC choppers. M.H. Rashid and S.N. Bhadra B p77
Forty years in control. J.C. West A p1
Frequency response multivariable control of robotic manipulators. S.J. Williams D p144
On the steady-state and dynamic characteristics of bipolar transistor power switches in low-loss technology. H.W. van der Broeck, J.D. van Wyk and J.J. Schoeman B p251
Smith predictor and self-tuning control of muscle-relaxant drug administration. D.A. Linkens, M. Menad and A.J. Asbury D p212
The integration of computing and control. M.G. Shortland E p1
Variable-structure-system control applied to AGC of an interconnected power system. A. Kumar, O.P. Malik and G.S. Hope C p23

CONTROL SYSTEMS

An algorithm for observability determination in water-system state estimation. A. Bargiela D p245
Choice of the sampling interval for the identification of continuous-time systems from samples of input/output data. N.K. Sinha and S. Puthenpura D p263
Combined control and protection system for improved performance of HVDC links in the presence of AC faults. G.G. Galanos, N. Vovos and G. Giannakopoulos C d93
Computationally efficient IV algorithm for structure and parameter identification of linear systems. M.S. Ahmed D p37
Decentralised load-frequency control. J.C. Geromel and P.L.D. Peres D p225
Decoupling techniques applied to the design of a controller for an unregulated synchronous machine. D.P. Papadopoulos and P.N. Paraskevopoulos C p277
Design of compensation schemes for a nonminimum-phase multivariable plant. P.T. Kidd, N. Munro and D.E. Winterbone D p75
Design of delayed control systems using Zakian's framework. A.T. Bada D p251
Design of observers and stabilising feedback controllers for singularly perturbed discrete systems. H. Kando and T. Iwazumi D p1
Forty years in control. J.C. West A p1
Integral cycle control of stand-alone generators. J.M. Elder, J.T. Boys and J.L. Woodward C p57
Microprocessor control of a 'hidden-link' convertor drive. P.H. Chappell and R.M. Davis B p87
Modified approach to state-space self-tuning control with pole assignment. F.K. Omani and N.K. Sinha D p257
Power system stabiliser for large disturbances. A. Ghosh, G. Ledwich, G.S. Hope and O.P. Malik C p14
Practical application of a heuristic fuzzy rule-based controller to the dynamic control of a robot arm. N.J. Mandič, E.M. Scharf and E.H. Mamdani D p190
Refined design method for sampled-data control systems: the pseudo-continuous-time (PCT) control system design. C.H. Houpis D p69
Robust nonlinear feedback control for robotic manipulators. V.D. Tourassis and C.P. Neuman D p134
Self-tuning control of offset: a unified approach. P.S. Tuffs and D.W. Clarke D p100
Smith predictor and self-tuning control of muscle-relaxant drug administration. D.A. Linkens, M. Menad and A.J. Asbury D p212
Suboptimal switching strategies for microprocessor-controlled PWM inverter drives. S.R. Bowes and A.H. Midoun B p133 B d344
The integration of computing and control. M.G. Shortland E p1
Transient stability analysis of large-scale power systems with speed governor via vector Lyapunov functions. H. Shaaban and Lj. Grujić D p45
w-domain design of single- and double-valued relay control systems. C.P. Lewis D p219

CONTROL THEORY

A unified approach to the decoupled discrete adaptive control of manipulators. D.P. Stoten D p151
Accuracy of time-optimal control of the diffusion equation using a spatial discretisation technique. A.S.I. Zinober D p239
An algorithm for observability determination in water-system state estimation. A. Bargiela D p245
Approaches to roll-loop design for BTT CLOS guidance. D.J. Roddy, G.W. Irwin and H. Wilson D p268
Choice of the sampling interval for the identification of continuous-time systems from samples of input/output data. N.K. Sinha and S. Puthenpura D p263
Comments on a simplified analytical stability test for systems with delay. N. MacDonald D p237
Decentralised load-frequency control. J.C. Geromel and P.L.D. Peres D p225
Design of delayed control systems using Zakian's framework. A.T. Bada D p251
Forty years in control. J.C. West A p1
Global and local controllability of nonlinear systems. K. Balachandran D p14
Identification of linear systems with input and output noise: the Koopmans-Levin method. K.V. Fernando and H. Nicholson D p30
LQG design of discrete systems using a dual criterion. M.J. Grimble D p61
Lumped approximation of distributed systems and controllability questions. B.D.O. Anderson and P.C. Parks D p89
Modified approach to state-space self-tuning control with pole assignment. F.K. Omani and N.K. Sinha D p257
On the selection of states to be retained in a reduced-order model. G.J. Lastman, N.K. Sinha and P. Rózsa D d86
On using orthogonal functions for the analysis of singular systems. S.L. Campbell D d131
Power system stabiliser for large disturbances. A. Ghosh, G. Ledwich, G.S. Hope and O.P. Malik C p14
Practical application of a heuristic fuzzy rule-based controller to the dynamic control of a robot arm. N.J. Mandič, E.M. Scharf and E.H. Mamdani D p190
Refined design method for sampled-data control systems: the pseudo-continuous-time (PCT) control system design. C.H. Houpis D p69
Robustness of decentralised control systems subject to sensor perturbations. D. Petkovski D p53
w-domain design of single- and double-valued relay control systems. C.P. Lewis D p219

CONVERTORS

A capapacitor bank charger using a high-frequency link resonant circuit. S.A. Mirbod and W.G. Dunford B p327
Combined control and protection system for improved performance of HVDC links in the presence of AC faults. G.G. Galanos, N. Vovos and G. Giannakopoulos C d93
Design and characterisation of a very low current to frequency convertor. A. El-Hennawy, D. Borel and N. Saleh G p184 G e302
Digital controller for thyristor current source. F.L. Luo, R.D. Jackson and R.J. Hill B p46
Estimation of torque pulsation due to the behaviour of a convertor and an inverter in a brushless DC-drive system. S. Funabiki and T. Himei B p215

High-resolution switched-capacitor algorithmic digital-to-analogue convertor. K. Nagaraj G p200
On the steady-state and dynamic characteristics of bipolar transistor power switches in low-loss technology. H.W. van der Broeck, J.D. van Wyk and J.J. Schoeman B p251
RF power injected into the DC yard by an HVDC convertor pole. R.V. DeVore and E.P. Bohley C p36
Single- to 3-phase transient phase conversion in induction motor drives. P.G. Holmes B p289
Starting of convertor-fed synchronous machine drives. A.C. Williamson and K.M.S. Al-Khalidi B p209
State-space approach to the analysis and design of a synchronous phase convertor. C.-H. Liu and Y.-S. Lee B p164
The New Zealand harmonic legislation. D.A. Bradley, P.J. Morfee and L.A. Wilson B p177

CYBERNETICS AND ROBOTICS

Direct drive system for an industrial robot using a brushless DC motor. S. Williams B p53

DEMODULATION

Coherent demodulation of pilot tone single sideband with phase-locked TTIB/FFSR processing. A.J. Bateman and J.P. McGeehan F p363

DETECTION

Discharge detection techniques for stator windings. A. Wilson, R.J. Jackson and N. Wang B p234
Near-maximum-likelihood detectors for binary signals. W. Ser and A.P. Clark F p485
Radar detection prediction in sea clutter using the compound *K*-distribution model. S. Watts F p613

DIELECTRIC MATERIALS

A new method of solution of electric-field problems in nonisotropic materials with built-in conducting strips using the nodal method. A.Y. Hannalla, M.M.A. Salama and R. Hackam B p223
Analysis of dielectric measurements on switchgear bushings in British Rail 25 kV electrification switching stations. A. Bradwell and G.A. Bates B p1
Analysis of slot antenna on dielectric substrate. A. Nešic and B.D. Popović H p474
Determination of the complex dielectric constant, electric field and conductivity at the boundary of ionised gas. O.J. Tassicker A p45 A e103
Effects of enhanced heating by surface oxides on arc cathodes. K. Dimoff, P. Antoine and A.K. Vijh A p301
Finite-element analysis of the shielded cylindrical dielectric resonator. P.S. Kooi, M.S. Leong and A.L. Satya Prakash H p7
Fraunhofer interference of a dielectric interface with travelling wave radiation and the consequent reduction in dielectric waveguide bending loss. P.C. Kendall, J.H. Marsh, P.N. Robson and R.C. Hewson-Browne J p354
Measurement of dielectric loss in thin parallel-sided samples using an untuned cavity. P. Backhouse, N. Apsley and A. Smart A p280
Permittivity measurements using a frequency-tuned microwave TE_{01} cavity resonator. E. Ni and U. Stumper H p27
TE-scattering from a conducting strip loaded by a dielectric cylinder. M.D.G. Karunaratne, K.A. Michalski and C.M. Butler H p375
TM scattering from a conducting strip loaded by a dielectric cylinder. M.D.G. Karunaratne, K.A. Michalski and C.M. Butler H p115
Theory of arc resistance of solid dielectrics. A.L. Tslaf A p291

DIGITAL CIRCUITS

A digital dual-slope analogue to digital convertor. H. Jamal and F.E. Holmes G p149
Automated synthesis of digital circuits from RT-level description. S. Gai, M. Mezzalama and P. Prinetto E p265
Frequency transformations for the simple 2-port wave digital filter adaptor chain. S.S. Lawson G p237
Hierarchical specification and switch-level simulation of digital circuits. M. Soegaard-Knudsen E/I p102
High-resolution switched-capacitor algorithmic digital-to-analogue convertor. K. Nagaraj G p200
New design procedure for digital filters based on a finite-state machine implementation. I.K. Proudler and P.J.W. Rayner F p581

DIGITAL COMMUNICATION SYSTEMS

900 MHz digital cordless telephone. P.D. White, M.K. Gurcan and R.J.G. MacNamee F p425
Algorithms for frame alignment — some comparisons. E.V. Jones and M.N. Al-Subbagh F p529
Bit error distribution in digital mobile radiocommunication—comparison between field measurements and fading simulation. R.W. Lorenz and H.-J. Gelbrich F p343
Digital modems for land mobile radio. A.P. Clark F p348
Effect of adjacent channel interference and frequency-selective fading on outage of digital radio. I. Korn F p604
High-user-density digital cellular mobile radio systems. R. Steele and V.K. Prabhu F p396
Land mobile radio (Editorial). J.D. Parsons F p305
Near-maximum-likelihood detectors for binary signals. W. Ser and A.P. Clark F p485
New trapdoor-knapsack public-key cryptosystem. R.M.F. Goodman and A.J. McAuley E p289
Towards a high-capacity digital cellular mobile radio system. R. Steele F p405

DIGITAL COMPUTERS AND COMPUTATION

Bit-level systolic array implementation of the Winograd Fourier transform algorithm. J.S. Ward, J.V. McCanny and J.G. McWhirter F p473
Completely decentralised communication control in microcomputer clusters. C.C. Lau E p333
Construction and properties of the augmented and binary-depletion codes. M.R. Titchener E p163
Hierarchical specification and switch-level simulation of digital circuits. M. Soegaard-Knudsen E/I p102
Virtual memory for microcomputers. D. Morris, C.J. Theaker, R. Phillips and W.R. Love E p323

DIGITAL CONTROL

A loss minimised sinusoidal PWM inverter. J.T. Boys and S.J. Walton B p260
Design of observers and stabilising feedback controllers for singularly perturbed discrete systems. H. Kando and T. Iwazumi D p1
Digital controller for thyristor current source. F.L. Luo, R.D. Jackson and R.J. Hill B p46

DIGITAL INSTRUMENTATION

Theorems on power, mean and RMS values of uniformly sampled periodic signals. T.S. Rathore A e98

DIODES

A brief analysis of the transient forward voltage drop in fast diodes. D.F. Courtney I p277
A comparison of the photovoltaic and electroluminescent effects in GaP/Langmuir-Blodgett film diodes. M.C. Petty, J. Batey and G.G. Roberts I p133
A numerical analysis of the resurf diode structure. P. Walker, J.T. Davies and K.I. Nuttall I p285
Asymptotes for boundary determined current density of PIN diodes. J. McGhee, I.A. Henderson and M. Saffari I p272
Comparison of a beam propagation model for laser diodes with other modelling techniques. R. Baets and J. Buus J p205
Computer-aided thermal analysis of reverse-biased PIN diodes. V. Ramamurthy, K.N. Bhat and D. Kakati I d170
Factors affecting impact ionisation in multilayer avalanche photodiodes. B.K. Ridley J p177
GTO with monolithic antiparallel diode. E. Huang and J.P. Barnes I p245
Simulation of near ballistic electron transport in a submicron GaAs diode with $Al_xGa_{1-x}As$/GaAs heterojunction cathode. K. Tomizawa, Y. Awano, N. Hashizume and M. Kawashima I p37
The performance of high-voltage field-relieved Schottkey barrier diodes. C.A. Fisher, J.M. Shannon, D.H. Paxman and J.A.G. Slatter I p257

DISCHARGES, ELECTRIC

Discharge detection techniques for stator windings. A. Wilson, R.J. Jackson and N. Wang B p234
Electric field measurements in long gap discharge using Pockels device. K. Hidaka and Y. Murooka A p139
Statistical analysis of electric-arc-furnace parameter variations. J.D. Lavers and B. Danai C p82

DISCHARGES, GAS

Analysis of the arc formed along the surface of a flat plate immersed in a laminar flow of gas. S. Au, J. Santiago and P.R. Smy A e263
The effect of atmospheric humidity on the corona extinction voltage of circular cylinders. J. Rungis A p136

DISTRIBUTION NETWORKS

Distribution diary. R.C.R. Brooke A p533

DOPING

Threshold shift of NMOS transistors due to high energy arsenic source/drain implantation. K.A. Sabine, G.A.J. Amaratunga and A.G.R. Evans I p163

EARTHING

An innovative analysis of earthing grids for power substations. E.K.-N. Yung C p251
Microprocessor-based algorithm for high-resistance earth-fault distance protection. Q.S. Yang and I.F. Morrison C d94

EDDY CURRENTS

Complementary variational formulation for eddy-current problems using the field variables *E* and *H* directly. R.L. Ferrari A p157
On certain properties of the electric vector potential in eddy-current problems. M.R. Krakowski A p445
The use of transformations in applying boundary conditions to three-dimensional vector field problems. D. Rodger and J.F. Eastham A p165

EDUCATION AND TRAINING

By CNAA degrees. B.F.N. Briggs A p184
Engineers of quality, needed certainly, but deserved, perhaps. W. Fishwick A p181
Relation of supervised work experience to academic study in CNAA first degree courses. W.J. Callaway A p109
The cry for useless knowledge: education for a new Victorian technology. D.W. Jordan A p587
When the engineering has to stop. J.W. Baker A p193

ELECTROMAGNETIC THEORY

A new method of solution of electric-field problems in nonisotropic materials with built-in conducting strips using the nodal method. A.Y. Hannalla, M.M.A. Salama and R. Hackam B p223
All SET for CAE. E.M. Freeman A p15
Analysis of a horizontal two-element antenna array above a dielectric halfspace. K.A. Michalski, C.E. Smith and C.M. Butler H p335
Calculation of Poissonian fields by means of the method of tubes and slices. P. Hammond and Q. Zhan A p149
Complementary variational formulation for eddy-current problems using the field variables *E* and *H* directly. R.L. Ferrari A p157
Complex-source-point theory of Gaussian beams and resonators. K.M. Luk and P.K. Yu J p105
Dyadic Green function for the electromagnetic field in multilayered isotropic media: an operator approach. T. Sphicopoulos, V. Teodoridis and F.E. Gardiol H p329
Eigenfrequency distributions in multimode cavities. R.F.B. Turner, W.A.G. Voss, W.R. Tinga and H.P. Baltes H p82
Electromagnetic levitation of rotating cylinders. I.R. Ciric and R.M. Mathur A p21

Electromagnetic theory for optical disc resonators. J. Sarma and K.A. Shore J p325
Estimation of the characteristic impedance of a transmission line by variational methods. T.D. Tsiboukis H p171
Fast numerical method for calculation of electric and magnetic fields based on potential-flux duality. P. Hammond, M.C. Romero-Fuster and S.A. Robertson A p84
Field and power-density calculations in closed microwave systems by three-dimensional finite differences. M. De Pourcq H p360
Finite-element analysis of the shielded cylindrical dielectric resonator. P.S. Kooi, M.S. Leong and A.L. Satya Prakash H p7
General method for the computation of radiation in stratified media. J.J.H. Wang H p58
Magnetoresistive transducers for the measurement of magnetic tape speed. E.M. Deeley and A.M.H. Al-Habib A p33
Measurement of DC electric fields using the electro-optic effect. S.R.M. Robertson and A.J. Rogers J p195
Moment-method solution of the near-field distribution and far-field patterns of microstrip antennas. Y. Lin and L. Shafai H p369
Multilayer analysis of electromagnetic systems incorporating layers of discrete conductors. E. Spooner B p72
Nicholas Callan — priest, professor and scientist. M.T. Casey A p491
On certain properties of the electric vector potential in eddy-current problems. M.R. Krakowski A p445
On the efficient evaluation of integrals arising in the Sommerfeld halfspace problem. K.A. Michalski H p312
Representation of the electromagnetic fields of a dipole above an inhomogeneous half space. A. Mohsen H p127
Rigorous field theory analysis of quasiplanar waveguides. J. Bornemann H p1
Some extensions of the concept of complementary electromagnetic structures. B.D. Popović and A. Nešić H p131
Synthesis of electrical fields by optimisation of the shape of region boundaries. R. Palka A p28
TE-scattering from a conducting strip loaded by a dielectric cylinder. M.D.G. Karunaratne, K.A. Michalski and C.M. Butler H p375
TM scattering from a conducting strip loaded by a dielectric cylinder. M.D.G. Karunaratne, K.A. Michalski and C.M. Butler H p115
The use of transformations in applying boundary conditions to three-dimensional vector field problems. D. Rodger and J.F. Eastham A p165
Tomographic image reconstitution of objects from multi-incidence microwave exploration. M. Baribaud, F. Dubois, R. Floyrac and S. Wang H p286

ELECTRON DEVICES

Influence of space charge on field emission of electrons from spherical points. C.B. Wheeler A p104

ELECTRONIC CIRCUITS

An improved delay lock loop for use in ranging and data modulated spread-spectrum systems. R.F. Ormondroyd and L.A.A. Al-Rawas G p291
Comparison of five high speed bistables by computer simulation. D.M. Russ and D.W. Faulkner I p210
Design and characterisation of a very low current to frequency convertor. A. El-Hennawy, D. Borel and N. Saleh G p184 G e302
Design of precision switched-capacitor generalised integrators and their applications to the synthesis of nonlinear networks. A. Cichocki and R. Unbehauen G p225
Deterministic strategy for trimming thick-film distributed *RC* lowpass active filters. A.R. Analouei, A.J. Walton and N.G. Burrow G p7
Nonlinear analysis of a quartz multivibrator with a complementary switch. D.M. Vasiljević G p33
Phase adjustable channel selector circuit for the Gbit/s range. F. Lukanek and G. Heydt G p288
Single iteration approach to backward differentiation formulas. T.J. Kazmierski and K.G. Nichols G p249

ENERGY CONVERSION AND STORAGE

An accurate and simple technique of determination of the maximum power point and measurement of some solar cell parameters. S. Deb, K. Maitra and A. Roychoudhuri I p157 I e271
Effects of dust on the performance of concentrator photovoltaic cells. M.S. El-Shobokshy, A. Mujahid and A.K.M. Zakzouk I p5
Incorporation of large stochastic sources in the power system. A.K. David C p161
Novel travelling-wave energy convertor. A.H. Falkner I p1
Reliability and economic assessment of generating systems containing wind energy sources. R.N. Allan and P. Corredor Avella C p8

ENGINEERING ADMINISTRATION AND MANAGEMENT

An essay in futurology: groups, networks and complexity in the open society. A.C. Robb A p67
By our work is the city established. L. Finkelstein A p9
Design for testability. A p241
Design = quality. True or false?. A p228
Engineers of quality, needed certainly, but deserved, perhaps. W. Fishwick A p181
Marketing and sales co-operatives for electronic equipment manufacturers in a developing country: a feasibility study. D.P. Burton A p321
The economics of innovation. C. Freeman A p213
The evolution of a modern telecommunications network to the year 2000 and beyond. S. O'Hara A p467
The management of innovation. A p222
The technical review—engineering statements for investors. A p481
William Henley, pioneer electrical instrument maker and cable manufacturer, 1813 to 1882. A.F. Anderson A p249

ERRORS AND ERROR ANALYSIS

Analysis of a multilink system in the presence of noise, cochannel interference and some hardware imperfections. G. Lukatela and I.M. Kostić F p511 F e557
Error propagation in decision feedback receivers. J.J. O'Reilly and A.M. de Oliveira Duarte F p561
Experimental evaluation of packet error rates for the 850 MHz mobile channel. H.M. Hafez, A.U.H. Sheikh and B. McPhail F p366
Influence of timing errors on the performance of direct-detection optical-fibre communication systems. J.J. O'Reilly, J.R.F da Rocha and K. Schumacher J p309
New method for computation of error probability in PSK systems with interference. I. Korn F p461
Simplified technique for bounding error statistics for DFB receivers. A.M. de Oliveira Duarte and J.J. O'Reilly F p567
Transient effects in spectrum estimation. J.L. Douce and L. Balmer D p25

FAULT LOCATION

Bounded-set approach to the evaluation of the reliability of fault-tolerant systems. Part 2: unpowered spares, nonconstant failure rate, nonaggregatable systems. Y.W. Yak, T.S. Dillon and K.E. Forward E p224
Combined control and protection system for improved performance of HVDC links in the presence of AC faults. G.G. Galanos, N. Vovos and G. Giannakopoulos C d93
Fault diagnosis for a multistage Banyan interconnection network. V.P. Krothapalli, F. Lombardi and K. Nakajima E p146
Syndrome-testable logic design using DSTL arrays for detecting stuck-at and bridging faults. A. Pal and B. Bhattacharya E p251
Test point selection methods for the self-testing based analogue fault diagonosis system. C.C. Wu G p173 G e302
Testable design of RMC networks with universal tests for detecting stuck-at and bridging faults. B.B. Bhattacharya, B. Gupta, S. Sarkar and A.K. Choudhury E p155

FEEDBACK

Fibre optic serrodyne frequency translator based on a piezoelectrically-strained fibre phase shifter. J.P. Dakin, C.A. Wade and C. Haji-Michael J p287
Robust nonlinear feedback control for robotic manipulators. V.D. Tourassis and C.P. Neuman D p134
Synthesis of a follow-the-leader feedback switched-capacitor structure. E.I. El-Masry G p18

FERRITES AND FERROMAGNETICS

18–26 GHz finline resonance isolators using hexagonal ferrites. J. Helszajn and W. Thorpe H p73
Asymptotic study of rotationally symmetric waves in a circular anisotropic waveguide. K.P. Ivanov and G.N. Georgiev H p261
Contour-integral equation formulation of complex gyrator admittance of junction circulators using triangular resonators. J. Helszajn H p255
Design of a 90° 12 GHz Faraday rotator polariser using a cavity technique. J. Helszajn H p237
Design of a millimetre-wave ferrite isolator at 28.5 GHz. A. Beyer and I. Wolff H p244
Finite-element analysis of helical phase shifters. S. Kal and N.B. Chakraborti H p231
High-power tunable YIG filters. J. Clarke and M.R.B. Dunsmore H p251
Hot-pressed polycrystalline yttrium iron garnet for microwave loss investigations. A.O. Tooke H p267
Microwave ferrite engineering (Editorial). W.T. Nisbet H p221
New MIC 4-port circulator based on ferrite loaded microstrip-slot coupler. W. John and G. Boeck H p227
Nonreciprocal coupling in dielectric image lines. A. Nicol and L.E. Davis H p269
Nonreciprocal wave propagation in a hollow image guide with a ferrite layer. S.W. Yun and T. Itoh H p222

FIBRES, OPTICAL

All-fibre components using periodic coupling. R.C. Youngquist, J.L. Brooks, W.P. Risk, G.S. Kino and H.J. Shaw J p277
Fibre optic serrodyne frequency translator based on a piezoelectrically-strained fibre phase shifter. J.P. Dakin, C.A. Wade and C. Haji-Michael J p287
Introduction to the noninertial quality rate gyroscope and its applications. B.T. Trayner J p255
Locating and coupling fibres to integrated stripe waveguides. J.P.G. Bristow, P.J. Laybourn, A. McDonach and A.C.G. Nutt J p291
Polarisation optics for monomode fibre sensors. A.J. Rogers J p303
Requirements for gyroscopes for inertial navigation. J.D. Nuttall J p250
Serrodyne modulator in a fibre-optic gyroscope. C.J. Kay J p259
Two wide-dynamic-range signal-recovery schemes for the fibre-optic gyroscope. A.C. Lewin, A.D. Kersey and D.A. Jackson J p271

FIELD-EFFECT TRANSISTORS

Optimised travelling-wave amplifier with two parallel-gate transmission lines. U. Christ and F. Arndt I p140
Photovoltaic effects of GaAs MESFET layers. G.J. Papaioannou, J.A. Kaliakatsos, P.C. Euthymiou and J.R. Forrest I p167
Quasisaturation effect in high-voltage VDMOS transistors. J.L. Sanchez, M. Gharbi, H. Tranduc and P. Rossel I p42
Simple and continuous MOSFET models for the computer-aided design of VLSI. G.T. Wright I p187

FILTERS AND FILTERING

Adaptivity and design criteria of a latest-generation MTD processor. E. D'Addio and G. Galati F p58
Analytic design of constant delay switched-capacitor filters with amplitude selectivity. H. Baher G p281
Bilinear design of fully differential switched-capacitor ladder filters. F. Maloberti, F. Montecchi, G. Torelli and E. Halász G p266
Design of finite-duration impulse response digital and charge-coupled device filters with arbitrary attenuation characteristics. H. Baher G p193 G e302
Design of finite-duration impulse/response digital and charge-coupled device filters with arbitrary attenuation characteristics. H. Baher G p103
Design of parasitic-insensitive four-phase wave SC filters. Keping Chen and S. Eriksson G p46
Deterministic strategy for trimming thick-film distributed *RC* lowpass active filters. A.R. Analouei, A.J. Walton and N.G. Burrow G p7
Filter design for multiphase DC choppers. M.H. Rashid and S.N. Bhadra B p77
Frequency transformations for the simple 2-port wave digital filter adaptor chain. S.S. Lawson G p237
Local state models for *m*-dimensional operators. W.A. Porter and J.L. Aravena G p205

Low-frequency noise reduction in time-shared switched-capacitor ladder filters. F. Maloberti and F. Montecchi G p39
Method for designing half-band delta-modulation FIR filters. V. Anastassopoulos, N. Kouvaras and T. Deliyannis F p13
New design procedure for digital filters based on a finite-state machine implementation. I.K. Proudler and P.J.W. Rayner F p581
New result for limit cycles in two-dimensional recursive digital filters. D.C. McLernon and R.A. King G p53
On stability tests for two-dimensional digital filters. M.N.S. Swamy, L.M. Roytman and E.I. Plotkin G p57
On the realisation of asymmetric transmission zeros for crystal filter design. M.deP. Barros and L.F. Lind G p217
Parasitic insensitive GIC. C. Beesley and H. Rokos G p301
Position, velocity and acceleration estimates from the noisy radar measurements. K.V. Ramachandra F d65
Recursive estimation with adaptive divergence control. B.E. Ydstie and T. Co D p124
Recursive fixed-memory filter. P. Agathoklis and M.H. Hamza G p119
Suspended substrate stripline filters for ESM applications. J.E. Dean F p257
Synthesis of a follow-the-leader feedback switched-capacitor structure. E.I. El-Masry G p18
Synthesis of new canonical digital ladder filters by continued fractions. M. Ismail and H.K. Kim G p1
Timed gradient adaptive lattice equaliser. M.J. Rutter and P.M. Grant F p181

GENERATORS

Discharge detection techniques for stator windings. A. Wilson, R.J. Jackson and N. Wang B p234
Integral cycle control of stand-alone generators. J.M. Elder, J.T. Boys and J.L. Woodward C p57
Turbine-generator steady-state reactances. D.C. Macdonald, A.B.J. Reece and P.J. Turner C p101

GRAPH THEORY AND TOPOLOGY

A by-inspection analysis of SC networks using direct topological rules. J.J. Mulawka and G.S. Moschytz G p255
Modified approach to state-space self-tuning control with pole assignment. F.K. Omani and N.K. Sinha D p257

HISTORY

ASV: the detection of surface vessels by airborne radar. R.A. Smith, R. Hanbury-Brown, A.J. Mould, A.G. Ward and B.A. Walker A p359
Charging for electricity in the early years of electricity supply. C.N. Brown A p513
D – 13: some personal memories of 24th–28th May 1944. M. Ryle A p438
Development of radar for the Royal Navy 1935–44. J.D.S. Rawlinson A p441
Distribution diary. R.C.R. Brooke A p533
Duplex telegraphy and the artificial line: the beginnings of system modelling. P. Strange A p543
Editorial: Historical Radar. E.H. Putley A p325
H2S and the navigator. E.L. Killip A p399
Historical note on H2S. A.C.B. Lovell A p401
History of electrical engineering (Editorial). V.J. Phillips and P. Strange A p489
History of fighter direction. N. Orgel A p411
History of the electrical units and early standards. A.C. Lynch A p564
List of papers presented at the IEE's weekend meetings on the history of electrical engineering. A p602
Memories of radar research. J.D. Cockcroft A p327
Nicholas Callan — priest, professor and scientist. M.T. Casey A p491
Oboe: history and development. A.H. Reeves and J.E.N. Hooper A p394
Ohm's law and the Schuster effect. P.J. Davies and J.O. Marsh A p525
Optical, chemical and capillary oscillographs. V.J. Phillips A p503
The changing technology of electronic components and assemblies. A.D. Hawkins A p311
The cry for useless knowledge: education for a new Victorian technology. D.W. Jordan A p587
The development of centimetre AI. W.E. Burcham A p385
The first century of the Wiring Regulations. B. Bowers A p498
The history of television for public showing in cinemas in the United Kingdom. R.W. Burns A p553
The new H2Ss. J.B. Smith A p404
The radio war. Sir Robert Cockburn A p423
The story of IFF (identification friend or foe). Lord Bowden of Chesterfield A p435
The work of TRE in the invasion of Europe. J.W.S. Pringle A p340
Two electrical book collections: The Ronalds and Thompson Libraries. E.D.P. Symons A p582
Two electrical periodicals: *The Electrician* and *The Electrical Review* 1880–1890. P. Strange A p574
William Henley, pioneer electrical instrument maker and cable manufacturer, 1813 to 1882. A.F. Anderson A p249

HOLOGRAPHY

Computer simulation of holographic grating exposure. R.H.M. Dumas and P.J.R. Laybourn J p331

IMAGE PROCESSING

Adaptive windows for image processing. I. Aleksander and M.J. Dobree Wilson E p233
Depth-of-field improvements and removal of distortion in long wavelength imaging systems. A. Yamani and J.C. Bennett F p149
Feature determination and inexact matching of images of industrial components. A.M. Wallace E p309
Full-wave computed tomography. Part 3: Coherent shift-and-add imaging. R.A. Minard, B.S. Robinson and R.H.T. Bates A p50
On the dynamic range of coefficients generated in transform processing of digitised image data. R.J. Clarke F p107
Radial histograms as an aid in the inspection of circular objects. E.R. Davies D p158
Time-domain microwave target imaging. W.K. Yeung and S. Evans H p345
Two-dimensional convolution using number theoretic transforms without matrix transposition and without overlap. F. Marir, A.Y. Md. Shakaff and A.G.J. Holt G p211 G e302

INDUCTION MOTORS

Calculation of the bar resistance and leakage reactance of cage rotors with closed slots. S. Williamson and M.C. Begg B p125
Generalised harmonic analysis for the steady-state performance of sinusoidally-excited cage induction motors. S. Williamson and E.R. Laithwaite B p157
Helical motion induction motor. J.J. Cathey B p112
Performance calculation for single-sided linear induction motors with a solid steel reaction plate under constant current excitation. J.F. Gieras, A.R. Eastham and G.E. Dawson B p185
Phase-angle control of the repulsion/drive force ratio in two-phase linear induction motor with nonferromagnetic secondary. M. Shalaby B p81
Single- to 3-phase transient phase conversion in induction motor drives. P.G. Holmes B p289
Surface impedance of saturating iron in travelling fields. E.M. Deeley and B.J. Chalmers A p171

INDUSTRIAL APPLICATIONS OF POWER

A capapacitor bank charger using a high-frequency link resonant circuit. S.A. Mirbod and W.G. Dunford B p327
Distribution—the years of change. B.S. Townsend C p1
Economic designs for single-layer toroidal inductors. P.N. Murgatroyd and D. Belahrache B p315
Electroheat for industry. E.J. Davies A p77
Statistical analysis of electric-arc-furnace parameter variations. J.D. Lavers and B. Danai C p82

INFORMATION AND COMMUNICATION THEORY

Properties of amorphous silicon: a book of EMIS data reviews. I p224
Recent data review from EMIS: Conversion efficiencies of amorphous silicon solar cells. Y. Kuwano. I p195
Recent data review from EMIS: Diffusion coefficient of oxygen in silicon, temperature dependence. I p196
Recent data review from EMIS: Ionisation coefficient in GaAs, doping dependence. J.P.R. David. I p47
Recent data review from EMIS: Resistivity of *N*- and *P*-type crystalline silicon, doping dependence. M. Pawlik. I p195
Timed gradient adaptive lattice equaliser. M.J. Rutter and P.M. Grant F p181

INSTRUMENTATION AND MEASURING SCIENCE

An industry-based standards system for the measurement of power loss and apparent power of electrical sheet steel. H.J. Stanbury A p129
Compensative phase meter with lock-in detection. J. Siuzdak G p189 G e302
Computer modelling of the automotive energy requirements for internal combustion engine and battery electric-powered vehicles. J.R. Bumby, P.H. Clarke and I. Forster A p265
Error estimation in sampling digital wattmeters. F. Filicori, D. Mirri and M. Rinaldi A p122
Gas sensors made from Langmuir-Blodgett films of porphyrins. R.H. Tredgold, M.C.J. Young, P. Hodge and A. Hoofar I p151
Magnetoresistive transducers for the measurement of magnetic tape speed. E.M. Deeley and A.M.H. Al-Habib A p33
Measurement of DC electric fields using the electro-optic effect. S.R.M. Robertson and A.J. Rogers J p195
Measurement of dielectric loss in thin parallel-sided samples using an untuned cavity. P. Backhouse, N. Apsley and A. Smart A p280
Nickel and chromium plated terminals in current transformer circuits. P.J. Betts A p178
Optical, chemical and capillary oscillographs. V.J. Phillips A p503
Optoelectronic instrument for contour comparison. A.H. Falkner A p133
Theorems on power, mean and RMS values of uniformly sampled periodic signals. T.S. Rathore A e98

INSULATORS AND INSULATION

DC conductivity of Voltalit epoxy spacers in SF_6. B.M. Weedy A p450
Multiconductor transmission-line model for the line-end coil of large AC machines. P.G. McLaren and H. Oraee B p149 B d278

INTEGRATED CIRCUITS

An I^2L clocked gate array for undergraduate design exercises. C.R. Jesshope and P. Ashburn E/I p54
Design for testability (Editorial). R.G. Bennetts and M.A. Jack G p73
Design techniques for a 565/680 Mbit/s coder/decoder. I.C. Wood, M.S.J. Mudd, D.G. Taylor, P.J. Ward and P.H. Saul E/I p68
Designing with programmable logic. M.J.P. Bolton E/I p73
Electromagnetic theory for optical disc resonators. J. Sarma and K.A. Shore J p325
Failure modes and mechanisms for VLSI ICs—a review. F. Fantini and C. Morandi G p74
Fault localisation when testing complex circuits. R. Velazco G p241
Impact and opportunities for application specific integrated circuits (ASICs). M.G. Penn E/I p130
In situ study of electromigration by Joule displacement microscopy. Y. Martin I p9
Knowledge-based test generation. M.J. Schofield G p108
Pascal circuit compiler for UK5000. C.R. Jesshope E/I p116
Review of built-in test methodologies for gate arrays. K.A.E. Totton E/I p121
STRICT: a design language for strongly typed recursive integrated circuits. R.H. Campbell, A.M. Koelmans and M.R. McLauchlan E/I p108
Semicustom integrated circuits (Editorial). J.R. Grierson and S. Hollock E/I p49
The Megacell concept: an approach to painless custom design. J.S. Brothers, J.W. Tomkins and J.S. Williams E/I p91
The UK5000 array. B. Cosgrove G p90
Thermal impedance testing of high-speed gate arrays. E.R. Brown, K. Beasley and W.L. Barber G p277
Trends in the application of semiconductor technology. J.S. Arnold E/I p50
VLSI process compatible 8 bit CMOS DAC. P.H. Saul, D.W. Howard and C.J. Greenwood E/I p99
VLSI: the design problem. G.V.R. Bolton E/I p86

INTEGRATED OPTICS

Electro-optical serrodyne frequency translator for $\lambda = 1.3$ μm. L. Thylén, P. Sjöberg and G.E. Lindqvist **J** p119
Intrinsic mode theory of tapered optical waveguides. J.M. Arnold, A. Belghoraf and A. Dendane **J** p314
Rib waveguide curvature loss: the scalar problem. P.C. Kendall, P.N. Robson and J.E. Sitch **J** p140

INTERFERENCE

Effect of adjacent channel interference and frequency-selective fading on outage of digital radio. I. Korn **F** p604
HF spectral occupancy and frequency planning. N.F. Wong, G.F. Gott and L.W. Barclay **F** p548
Performance of SQAM systems in a nonlinearly amplified multichannel interference environment. J.-S. Seo and K. Feher **F** p175

INVERTERS

A loss minimised sinusoidal PWM inverter. J.T. Boys and S.J. Walton **B** p260
Estimation of torque pulsation due to the behaviour of a convertor and an inverter in a brushless DC-drive system. S. Funabiki and T. Himei **B** p215
Suboptimal switching strategies for microprocessor-controlled PWM inverter drives. S.R. Bowes and A.H. Midoun **B** d133 **B** d344

IONISATION

Determination of the complex dielectric constant, electric field and conductivity at the boundary of ionised gas. O.J. Tassicker **A** p45 **A** e103
Electrification current and voltage on a cylindrical object in the presence of an ion flow field in an air stream. M. Hara, M. Yashima, T. Tsutsumi and M. Akazaki **A** p59
Factors affecting impact ionisation in multilayer avalanche photodiodes. B.K. Ridley **J** p177

IONOSPHERIC PROPAGATION

HF spectral occupancy and frequency planning. N.F. Wong, G.F. Gott and L.W. Barclay **F** p548

LASERS

35 mW CW single-frequency injection laser with an external dispensive cavity. V.Yu. Bazhenov, A.P. Bogatov, P.G. Eliseev, O.G. Okhotnikov, G.T. Pak, M.P. Rakhvalsky, M.S. Soskin, V.B. Taranenko and K.A. Khairetdinov **J** p9
Auger recombination in a quantum-well-heterostructure laser. R.I. Taylor, R.A. Abram, M.G. Burt and C. Smith **J** p364
Bistability and instability in the output of a twin GaAs/GaAlAs diode external cavity ring laser. J. McInerney, L. Reekie and D.J. Bradley **J** p90
Critical analysis and correction of the rate equation for the injection laser. H.S. Sommers, Jr **J** p38
Design and fabrication of 1.5 μm ridge waveguide distributed feedback lasers. A.W. Nelson, L.D. Westbrook and P.J. Fiddyment **J** p12
Design considerations of the metal-clad ridge-waveguide laser with distributed feedback. R. Schimpe **J** p133
High-power lasers of the twin-ridge-substrate type. M. Wada, K. Hamada, H. Shimizu, M. Kume, F. Tajiri, K. Itoh and G. Kano **J** p3
Improvement of high reliability inverted rib-waveguide lasers by the observation of degradation mechanisms. A. Rosiewicz, C.A. Park, B.R. Butler, C.J. Jones and M.G. Palin **J** p319
Intensity distribution of semiconductor laser emission due to the excitation of satellite modes. R. Schimpe **J** p146
Intensity fluctuation of 1.5 μm InGaAsP/InP distributed feedback lasers involving the optical feedback effect. Y. Yoshikuni, H. Kawaguchi and T. Ikegami **J** p20
Linewidth calculations for distributed-feedback lasers. M.J. Adams and I.D. Henning **J** p136
Measurement and analysis of planar stripe-geometry GaAlAs/GaAs heterojunction laser wavefronts and their variation with pumping current. M.A. Manko, B.I. Makhsudov, G.T. Mikaelyan and Pham Van Hoi **J** p64
Mode designations of laser beams. Kwai-Man Luk and Ping-Kong Yu **J** p191
Mode partition noise in gain-guided lasers and its effect on a multimode fibre-optic system. A.K. Laughton **J** p359
Model for semiconductor laser structures incorporating longitudinal and transverse variations. K.A. Shore **J** p52
Optically excited (Ga, In, As, P) film lasers. R.P. Salathé **J** p77
Prediction of self-sustained oscillations in buried-heterostructure stripe lasers. B.S. Poh **I** p29
Principles of semiconductor laser modelling. J. Buus **J** p42
Relative contribution of carrier diffusion and spontaneous emission to the strength and damping of relaxation oscillations in InGaAsP/InP lasers. D. Leclerc, P. Brosson, B. Fernier and J. Benoit **J** p28
Self-oscillation frequency characteristics of a GaAs/GaAlAs *pn-pn* laser. W. Shou-wu, Z. Quan-sheng, L. Zhao-yin and W. Rong-han **J** p69
Semiconductor injection lasers (editorial). A.G. Steventon **J** p2
Temperature-dependent lifetests of IRW lasers operating at 1.3 μm. A. Rosiewicz, B.R. Butler and R.E.P. Hinton **J** p97
Transient time-averaged spectra of rapidly-modulated semiconductor lasers. M. Osiński and M.J. Adams **J** p34

LIGHTING

Variation of efficacy with arc tube bore and current in a high-pressure sodium lamp. P.L. Denbigh, B.F. Jones and D.A. Mottram **A** p99

LIGHTNING AND LIGHTNING PROTECTION

Analogue simulation of lightning induced voltages and its application for analysis of overhead-ground-wire effects. S. Yokoyama, K. Yamamoto and H. Kinoshita **C** p208
Lightning performance criteria for electric power systems. R.B. Anderson **C** p298
Marx circuit modified by adding a tail sphere gap to generate lightning impulses lasting a few microseconds. A. Carrus **A** p40
Sensitivity analysis of lightning performance calculations for transmission lines and substations. M.S. Savic **C** p217

LINEAR MOTORS

Adaptive microprocessor control of a linear helical reluctance motor. R.J.A. Paul, P.J. Fleming and A.M. Elsamahy **B** p106
Performance calculation for single-sided linear induction motors with a solid steel reaction plate under constant current excitation. J.F. Gieras, A.R. Eastham and G.E. Dawson **B** p185
Phase-angle control of the repulsion/drive force ratio in two-phase linear induction motor with nonferromagnetic secondary. M. Shalaby **B** p81

LINEAR NETWORKS

Comments on a simplified analytical stability test for systems with delay. N. MacDonald **D** p237

LOAD AND VOLTAGE REGULATION

Dynamic load model synthesis. K.P. Wong, W.D. Humpage, T.T. Nguyen and K.K.K. Ho **C** p179
Effect of AC system impedance on the regulation and, hence, the stability margin of HVDC schemes. R. Yacamini and A.I. Taalab **C** p202
Optimisation of discrete-type load-frequency regulators considering generation-rate constraints. T. Hiyama **C** d265
The mismatch theorem and second-order load-flow algorithms. W. Hubbi **C** p189

LOGIC

Low-complexity functional approach to logic controller design. R.C. Chandra **E** p8
On the implementation of sequential circuits with PLA modules. J.I. Acha and J. Calvo **E** p246
Testable design of RMC networks with universal tests for detecting stuck-at and bridging faults. B.B. Bhattacharya, B. Gupta, S. Sarkar and A.K. Choudhury **E** p155

MAGNETIC DEVICES AND PROPERTIES

A miniature transformer-coupled high-speed synchronous motor. D.E. Hesmondhalgh and D. Tipping **B** p319
Magnetoresistive transducers for the measurement of magnetic tape speed. E.M. Deeley and A.M.H. Al-Habib **A** p33
Some aspects of transformer core loss. P.H.G. Allen **A** p113
Torque availability from small synchronous motors using high coercivity magnets. D.E. Hesmondhalgh and D. Tipping **B** p279

MAGNETIC FIELDS

Fast numerical method for calculation of electric and magnetic fields based on potential-flux duality. P. Hammond, M.C. Romero-Fuster and S.A. Robertson **A** p84
On certain properties of the electric vector potential in eddy-current problems. M.R. Krakowski **A** p445
Surface impedance of saturating iron in travelling fields. E.M. Deeley and B.J. Chalmers **A** p171

MATHEMATICAL TECHNIQUES

A fast pipelined DFT processor and its programming considerations. K.-H. Tzou and N.P. Morgan **G** p273
A load-pull technique for the determination of transistor *S* parameters under large-signal conditions. M.A. Osborne and G.B. Morgan **H** p419
A note on some computational aspects of the jump-resonance problem in 3-phase systems. S.N. Bhadra **C** p248
An algorithm for observability determination in water-system state estimation. A. Bargiela **D** p245
An efficient algorithm for antenna synthesis updating following null-constraint changes. M.A. Magdy, F.J. Paoloni and J.Y.C. Cheah **H** p339
Analysis of armature circuit inductance of DC machines by FEM. K. Sawa, H. Yamamoto and K. Miyachi **B** p307
Analytic design of constant delay switched-capacitor filters with amplitude selectivity. H. Baher **G** p281
Antenna adaptivity by direction finding and null steering. J.E. Hudson **H** p307
Array pattern synthesis by the method of alternating orthogonal projections: the general case. T.S. Ng **H** p451
Binary-decision graphs for implementation of Boolean functions. M. Silva and R. David **E** p175
Bounded-set approach to the evaluation of the reliability of fault-tolerant systems. Part 1: methodology, powered spares. Y.W. Yak, T.S. Dillon and K.E. Forward **E** p217
Bumpless monotonic bicubic interpolation for MOSFET device modelling. T. Shima **I** p147
Calculation of Poissonian fields by means of the method of tubes and slices. P. Hammond and Q. Zhan **A** p149
Choice of the sampling interval for the identification of continuous-time systems from samples of input/output data. N.K. Sinha and S. Puthenpura **D** p263
Contour-integral equation formulation of complex gyrator admittance of junction circulators using triangular resonators. J. Helszajn **H** p255
Current instability and chopping with arcs in series. D. Andersson **C** p224
Decomposed load-flow algorithm suitable for parallel processor implementation. M. Rafian, M.J.H. Sterling and M.R. Irving **C** p281
Decomposition of antenna signals into plane waves. J.E. Hudson **H** p53
Decoupling techniques applied to the design of a controller for an unregulated synchronous machine. D.P. Papadopoulos and P.N. Paraskevopoulos **C** p277
Dyadic Green function for the electromagnetic field in multilayered isotropic media: an operator approach. T. Sphicopoulos, V. Teodoridis and F.E. Gardiol **H** p329
Efficient tolerance analysis using control variates. R.S. Soin and P.J. Rankin **G** p131
Fast numerical method for calculation of electric and magnetic fields based on potential-flux duality. P. Hammond, M.C. Romero-Fuster and S.A. Robertson **A** p84
Finite-element analysis of helical phase shifters. S. Kal and N.B. Chakraborti **H** p231
Intermodulation owing to quantisation of two-carrier-level SCPC system. M.T. Abuelma'atti **G** p68
LQG design of discrete systems using a dual criterion. M.J. Grimble **D** p61
LU decomposition and forward-backward substitution of recursive bordered block diagonal matrices. M. Vlach **G** p24

Local state models for m-dimensional operators. W.A. Porter and J.L. Aravena G p205
Low-frequency approach to the problem of a vertical wire antenna above an imperfect ground. A. Karwowski H p123
Lumped approximation of distributed systems and controllability questions. B.D.O. Anderson and P.C. Parks D p89
Matrix multiplication and division of polynomials. A.P. Papliński D p95
Modelling of commodity retail networks at static equilibrium price levels. S.N. Rumala G p167
Modelling of packet-switching networks with nodal blocking. A.J. Kozlowski and N.D. Georganas F p193
Modelling of saturated reactor compensator for system studies. A.E. Davies, J.J. Uriola Sereno and D.M. German C p307
Modified two-moment approach for constant-service tandem queues. A. Abo-Taleb and H.T. Mouftah E p170
New design procedure for digital filters based on a finite-state machine implementation. I.K. Proudler and P.J.W. Rayner F p581
New possibilities for phaseless microwave diagnostics. Part 1: Error reduction techniques. A.P. Anderson and S. Sali H p291
New possibilities for phaseless microwave diagnostics. Part 2: The uniqueness problem and half plane imaging. S. Sali H p299
On the dynamic range of coefficients generated in transform processing of digitised image data. R.J. Clarke F p107
On the efficient evaluation of integrals arising in the Sommerfeld halfspace problem. K.A. Michalski H p312
On using orthogonal functions for the analysis of singular systems. S.L. Campbell D d131
Online correction dispatch algorithm for dynamic security. K.S. Chandrashekhar C p20
Optimising the synthesis of shaped beam antenna patterns. H.J. Orchard, R.S. Elliot and G.J. Stern H p63
Performance comparison of two exact outage simulation techniques. G.B. Jasmon, R.M. Amin and C.Y. Chuan C p285
Probabilistic load flow considering network outages. A.M. Leite da Silva, R.N. Allan, S.M. Soares and V.L. Arienti C p139
Resistance between row and column terminals in a uniform resistor matrix. A. Tsdaka G p165
Robust state estimation in power systems using sparse linear programming. B.C. Clewer, M.R. Irving and M.J.H. Sterling C p123
Runge Kutta method for delay-differential systems. G.S. Virk D p119
Single iteration approach to backward differentiation formulas. T.J. Kaznierski and K.G. Nichols G p249
Some shifting methods for matrix multiplication. M.K. Stojčev, I.Ž. Milovanović and Ž.C. Radonjić E p33
Synthesis of electrical fields by optimisation of the shape of region boundaries. R. Palka A p28
Synthesis of new canonical digital ladder filters by continued fractions. M. Ismail and H.K. Kim G p1
Systematic methods for the problem solving process with particular reference to design. S. Blandford and R.P. Hope A p199
The inverse problem to matrix polynomial factorisation and its application to circuit design. Z.W. Trzaska G p221
Towards an algorithm for dielectric-edge diffraction coefficients. R.H.T. Bates, T.S. Yeo and D.J.N. Wall H p461
Two-dimensional convolution using number theoretic transforms without matrix transposition and without overlap. F. Marir, A.Y. Md. Shakaff and A.G.J. Holt G p211 G e302
Variable-structure-system control applied to AGC of an interconnected power system. A. Kumar, O.P. Malik and G.S. Hope C p23

MATRIX ALGEBRA

LU decomposition and forward-backward substitution of recursive bordered block diagonal matrices. M. Vlach G p24
Matrix multiplication and division of polynomials. A.P. Papliński D p95
Structural properties of pseudorandom arrays and volumes and their related sequences. D.H. Green E p133
The inverse problem to matrix polynomial factorisation and its application to circuit design. Z.W. Trzaska G p221
Two-dimensional convolution using number theoretic transforms without matrix transposition and without overlap. F. Marir, A.Y. Md. Shakaff and A.G.J. Holt G p211 G e302

MEASUREMENT AND MEASURING

An accurate and simple technique of determination of the maximum power point and measurement of some solar cell parameters. S. Deb, K. Maitra and A. Roychoudhuri I p157 I e271
An industry-based standards system for the measurement of power loss and apparent power of electrical sheet steel. H.J. Stanbury A p129
Calibration of multiport reflectometers. S.K. Judah H p468
Charging for electricity in the early years of electricity supply. C.N. Brown A p513
Computer modelling of the automotive energy requirements for internal combustion engine and battery electric-powered vehicles. J.R. Bumby, P.H. Clarke and I. Forster A p265
Error estimation in sampling digital wattmeters. F. Filicori, D. Mirri and M. Rinaldi A p122
Forty years in control. J.C. West A p1
Gas sensors made from Langmuir-Blodgett films of porphyrins. R.H. Tredgold, M.C.J. Young, P. Hodge and A. Hoorfar I p151
Measurement of DC electric fields using the electro-optic effect. S.R.M. Robertson and A.J. Rogers J p195
Measurement of dielectric loss in thin parallel-sided samples using an untuned cavity. P. Backhouse, N. Apsley and A. Smart A p280
Microelectronic ion sensors: A critical survey. R.G. Kelly and A.E. Owen I p227
New means of measuring current in the vicinity of zero in an AC circuit breaker. J. Mahdavi, A. Schaeffer, C. Velo, L. Bompa and J. Gatellet A p285
Optical, chemical and capillary oscillographs. V.J. Phillips A p503
Real-time on-line pattern recognition of eye position and movement. H.F. Li, F.H.Y. Chan, P.W.F. Poon, W.F. Yan, W.Y. Wong and J.C. Hwang E p293
Some aspects of transformer core loss. P.H.G. Allen A p113
Temperature measurements of thin films on substrates. D. de Cogan, A.F. Howe and P.W. Webb I p143
Variation of efficacy with arc tube bore and current in a high-pressure sodium lamp. P.L. Denbigh, B.F. Jones and D.A. Mottram A p99

METAL-INSULATOR-SEMICONDUCTOR STRUCTURES

A comparison of the photovoltaic and electroluminescent effects in GaP/Langmuir-Blodgett film diodes. M.C. Petty, J. Batey and G.G. Roberts I p133
Finite-element analysis of the shielded cylindrical dielectric resonator. P.S. Kooi, M.S. Leong and A.L. Satya Prakash H p7

METAL-OXIDE-SEMICONDUCTOR STRUCTURES

A Model for MOS transistors. G.S. Bhatti, B.K. Jones and P.C. Russell I p248
Experimental 1 Mbit DRAM using power reduction techniques. K. Kimura, K. Itoh, R. Hori, J. Etoh and Y. Kawajiri I p23
Influence of ionising irradiation on the channel mobility of MOS transistors. A. Bellaouar, G. Sarrabayrouse and P. Rossel I p184
LDMOS transistors with implanted and deposited surface layers. K. Board and M. Darwish I p177
Quasisaturation effect in high-voltage VDMOS transistors. J.L. Sanchez, M. Gharbi, H. Tranduc and P. Rossel I p42
Study of saturation conduction in short-channel MOS transistors by numerical simulation. K.Y. Tong I p173
Threshold shift of NMOS transistors due to high energy arsenic source/drain implantation. K.A. Sabine, G.A.J. Amaratunga and A.G.R. Evans I p163

MICROPROCESSORS

Adaptive microprocessor control of a linear helical reluctance motor. R.J.A. Paul, P.J. Fleming and A.M. Elsamahy B p106
Completely decentralised communication control in microcomputer clusters. C.C. Lau E p333
Frequency-response identification of a linear helical reluctance motor. R.J.A. Paul, P.J. Fleming and A.M. Elsamahy B p101
Markov models for a multiple processor system with a shared bus. P. Markenscoff E p316
Microprocessor control of a 'hidden-link' convertor drive. P.H. Chappell and R.M. Davis B p87
Microprocessor-based development system for PWM variable-speed drives. S.R. Bowes and T. Davies B p18
Real-time on-line pattern recognition of eye position and movement. H.F. Li, F.H.Y. Chan, P.W.F. Poon, W.F. Yan, W.Y. Wong and J.C. Hwang E p293
Suboptimal switching strategies for microprocessor-controlled PWM inverter drives. S.R. Bowes and A.H. Midoun B p133 B d344
Virtual memory for microcomputers. D. Morris, C.J. Theaker, R. Phillips and W.R. Love E p323

MICROSTRIP AND STRIPLINE

Characteristics of asymmetrical coupled shielded microstrip lines. S.S. Bedair H p342
Fast, accurate computational method for asymmetric coupled microstrip parameters. E.A.F. Abdallah and N.A. El-Deeb H p69
Microstrip circuit for converting microwave low power to DC energy. T. Razban, M. Bouthinon and A. Coumes H p107
New MIC 4-port circulator based on ferrite loaded microstrip-slot coupler. W. John and G. Boeck H p227
Phase constant characteristics of generalised asymmetric three-coupled microstrip lines. B.J. Janiczak H p23
Radiation characteristics and polarisation of undulated microstrip line antennas. L. Shafai and A.A. Sebak H p433
Upper and lower bounds on mode capacitances for a large class of anisotropic multilayered microstrip-like transmission lines. F. Medina and M. Horno H p157

MICROWAVE ACTIVE COMPONENTS

Microstrip circuit for converting microwave low power to DC energy. T. Razban, M. Bouthinon and A. Coumes H p107
Modern approaches to broadband matching problems. B.S. Yarman H p87
Noise parameters of embedded noisy two-port networks. J. Engberg H p17
Phase constant characteristics of generalised asymmetric three-coupled microstrip lines. B.J. Janiczak H p23

MICROWAVE CIRCUITS AND NETWORKS

Automatic stepped-frequency six-port reflectometer for WG22. L.D. Hill and E.J. Griffin H p77
Circular-electric-mode hybrid coupler. A.J. Sangster and D.J. McIntosh H p164
Equivalent-circuit models for frequency-selective surfaces at oblique angles of incidence. C.K. Lee and R.J. Langley H p395
Fast, accurate computational method for asymmetric coupled microstrip parameters. E.A.F. Abdallah and N.A. El-Deeb H p69
Modern approaches to broadband matching problems. B.S. Yarman H p87
Noise parameters of embedded noisy two-port networks. J. Engberg H p17
Novel travelling-wave energy convertor. A.H. Falkner I p1
Optimised travelling-wave amplifier with two parallel-gate transmission lines. U. Christ and F. Arndt I p140
Phase constant characteristics of generalised asymmetric three-coupled microstrip lines. B.J. Janiczak H p23
Single-layer multiband frequency-selective surfaces. C.K. Lee, R.J. Langley and E.A. Parker H p411
Upper and lower bounds on mode capacitances for a large class of anisotropic multilayered microstrip-like transmission lines. F. Medina and M. Horno H p157

MICROWAVE MEASUREMENTS

Automatic stepped-frequency six-port reflectometer for WG22. L.D. Hill and E.J. Griffin H p77
Calibration of multiport reflectometers. S.K. Judah H p468
New possibilities for phaseless microwave diagnostics. Part 1: Error reduction techniques. A.P. Anderson and S. Sali H p291
New possibilities for phaseless microwave diagnostics. Part 2: The uniqueness problem and half plane imaging. S. Sali H p299
Permittivity measurements using a frequency-tuned microwave TE_{01} cavity resonator. E. Ni and U. Stumper H p27
Six port reflectometer for the 75–105 GHz band. L.D. Hill H p141

MICROWAVE PASSIVE COMPONENTS

Circular-electric-mode hybrid coupler. A.J. Sangster and D.J. McIntosh **H** p164
Coaxial waveguide to circular cylindrical waveguide junction. A.J. Sangster and D.J. McIntosh **H** p203
Contour-integral equation formulation of complex gyrator admittance of junction circulators using triangular resonators. J. Helszajn **H** p255
Eigenfrequency distributions in multimode cavities. R.F.B. Turner, W.A.G. Voss, W.R. Tinga and H.P. Baltes **H** p82
High-power tunable YIG filters. J. Clarke and M.R.B. Dunsmore **H** p251
New MIC 4-port circulator based on ferrite loaded microstrip-slot coupler. W. John and G. Boeck **H** p227
Quasioptical components for 230 GHz and 460 GHz. G.A. Ediss, Wang. S-J and N.J. Keen **H** p99
Suspended substrate stripline filters for ESM applications. J.E. Dean **F** p257
Theory of the grating coupler for a grounded-dielectric-slab-waveguide. W.S. Park and S.R. Seshadri **H** p149

MICROWAVE SYSTEMS

Antenna pattern degradation due to tower guy wires on microwave radio systems. W.S. Davies, S.J. Hurren, E.D.S. Fall and P.R. Copeland **H** p181
Field and power-density calculations in closed microwave systems by three-dimensional finite differences. M. De Pourcq **H** p360
Microstrip circuit for converting microwave low power to DC energy. T. Razban, M. Bouthinon and A. Coumes **H** p107
Modern approaches to broadband matching problems. B.S. Yarman **H** p87
Optoelectronic microwave switching. W. Platte **J** p126
Time-domain microwave target imaging. W.K. Yeung and S. Evans **H** p345

MILLIMETRE WAVE DEVICES AND COMPONENTS

Automatic stepped-frequency six-port reflectometer for WG22. L.D. Hill and E.J. Griffin **H** p77
Design of a millimetre-wave ferrite isolator at 28.5 GHz. A. Beyer and I. Wolff **H** p244
Dual-mode horns at millimetre and submillimetre wavelengths. G.A. Ediss **H** p215
Nonreciprocal coupling in dielectric image lines. A. Nicol and L.E. Davis **H** p269
Six port reflectometer for the 75–105 GHz band. L.D. Hill **H** p141

MODELLING

A Model for MOS transistors. G.S. Bhatti, B.K. Jones and P.C. Russell **I** p248
Bounded-set approach to the evaluation of the reliability of fault-tolerant systems. Part 1: methodology, powered spares. Y.W. Yak, T.S. Dillon and K.E. Forward **E** p217
Bounded-set approach to the evaluation of the reliability of fault-tolerant systems. Part 2: unpowered spares, nonconstant failure rate, nonaggregatable systems. Y.W. Yak, T.S. Dillon and K.E. Forward **E** p224
Bumpless monotonic bicubic interpolation for MOSFET device modelling. T. Shima **I** p147
Comparison of a beam propagation model for laser diodes with other modelling techniques. R. Baets and J. Buus **J** p205
Design for testability (Editorial). R.G. Bennetts and M.A. Jack **G** p73
Duplex telegraphy and the artificial line: the beginnings of system modelling. P. Strange **A** p543
Electronic support measures (Editorial). P.W. East and J.L. Everett **F** p205
Failure modes and mechanisms for VLSI ICs—a review. F. Fantini and C. Morandi **G** p74
Fault localisation when testing complex circuits. R. Velazco **G** p241
Faults and fault effects in NMOS circuits—impact on design for testability. N. Burgess, R.I. Damper, S.J. Shaw and D.R.J. Wilkins **G** p82
Identification of essential states for reduced-order models using a modal analysis. M.A. Johnson and M.W. Daniels **D** p111
Local state models for m-dimensional operators. W.A. Porter and J.L. Aravena **G** p205
Markov models for a multiple processor system with a shared bus. P. Markenscoff **E** p316
Modelling bulk and surface recombination in the sidewall space-charge layer of an emitter-base junction. D.J. Roulston and A.A. Eltoukhy **I** p205
Modelling compelled multiprocessor systems. T.G. Connelly and M.P. Griffiths **E** p211
Multiconductor transmission-line model for the line-end coil of large AC machines. P.G. McLaren and H. Oraee **B** p149 **B** d278
Quasisaturation effect in high-voltage VDMOS transistors. J.L. Sanchez, M. Gharbi, H. Tranduc and P. Rossel **I** p42
Self-tuning control of offset: a unified approach. P.S. Tuffs and D.W. Clarke **D** p100
Simple and continuous MOSFET models for the computer-aided design of VLSI. G.T. Wright **I** p187
Small signal bias dependent model for high frequency transistors. K. Bharath Kumar **I** p201
Syndrome-testable logic design using DSTL arrays for detecting stuck-at and bridging faults. A. Pal and B. Bhattacharya **E** p251

MODULATION

A loss minimised sinusoidal PWM inverter. J.T. Boys and S.J. Walton **B** p260
Digital correlator using delta-sigma modulation. A.M.A.H. Al-Samarraie and M.A.H. Abdul-Karim **G** p14
Land mobile radio (Editorial). J.D. Parsons **F** p305
Performance of SQAM systems in a nonlinearly amplified multichannel interference environment. J.-S. Seo and K. Feher **F** p175
Performance of generalised AMF receivers for continuous phase modulation. A. Svensson and C.-E. Sundberg **F** p541
Prediction of bit error rate in the presence of impulsive noise: a numerical approach using measured noise data. J.D. Parsons and T. Reyhan **F** p334
Serrodyne modulator in a fibre-optic gyroscope. C.J. Kay **J** p259

MOTORS

A loss minimised sinusoidal PWM inverter. J.T. Boys and S.J. Walton **B** p260
A miniature transformer-coupled high-speed synchronous motor. D.E. Hesmondhalgh and D. Tipping **B** p319
Chopper control of DC disc-armature motor using power MOSFETs. R.J. Hill and P. Cork **B** p93
DC traction motor with slotless armature. E. Spooner **B** p61
Direct drive system for an industrial robot using a brushless DC motor. S. Williams **B** p53
Discharge detection techniques for stator windings. A. Wilson, R.J. Jackson and N. Wang **B** p234
Dual model of a DC machine with gyrators. R.S. Ramshaw and G. Xie **B** p57
Editorial. K.J. Binns **B** p233
Generalised harmonic analysis for the steady-state performance of sinusoidally-excited cage induction motors. S. Williamson and E.R. Laithwaite **B** p157
Helical motion induction motor. J.J. Cathey **B** p112
Multiconductor transmission-line model for the line-end coil of large AC machines. P.G. McLaren and H. Oraee **B** p149 **B** d278
Nicholas Callan — priest, professor and scientist. M.T. Casey **A** p491
Parameters and performance of a high-field permanent-magnet synchronous. B.J. Chalmers, S.A. Hamed and G.D. Baines **B** p117
Performance calculation for single-sided linear induction motors with a solid steel reaction plate under constant current excitation. J.F. Gieras, A.R. Eastham and G.E. Dawson **B** p185

MULTIVARIABLE CONTROL SYSTEMS

Design of compensation schemes for a nonminimum-phase multivariable plant. P.T. Kidd, N. Munro and D.E. Winterbone **D** p75
Frequency response multivariable control of robotic manipulators. S.J. Williams **D** p144
Optimal regulator design of linear multivariable systems with prescribed pole locations in the presence of system disturbances. A.K. Mahalanabis and J.K. Pal **D** p231
Sensitivity-reduced optimal discrete linear regulator with prescribed closed-loop eigenvalues. M. Gopal and P. Pratapachandran Nair **D** p18

NETWORKS

A by-inspection analysis of SC networks using direct topological rules. J.J. Mulawka and G.S. Moschytz **G** p255
Basic circuit structures for the synthesis of piecewise polynomial one-port resistors. A. Rueda, J.L. Huertas and A. Rodriguez-Vazquez **G** p123
Cascade realisation of the irrational immittance $s^{1/2}$. V. Ramachandran, C.S. Gargour and M. Ahmadi **G** p64
Deterministic strategy for trimming thick-film distributed RC lowpass active filters. A.R. Analouei, A.J. Walton and N.G. Burrow **G** p7
Experiment to investigate self-testing techniques in VLSI. T.W. Williams, R.G. Walther, P.S. Bottorff and S. Das Gupta **G** p105
Fault diagnosis for a multistage Banyan interconnection network. V.P. Krothapalli, F. Lombardi and K. Nakajima **E** p146
Modelling of commodity retail networks at static equilibrium price levels. S.N. Rumala **G** p167
Modelling of packet-switching networks with nodal blocking. A.J. Kozlowski and N.D. Georganas **F** p193
Modified two-moment approach for constant-service tandem queues. A. Abo-Taleb and H.T. Mouftah **E** p170
Optimal channel assignment in a packet-switching network with a conflict-free multiple-access scheme. K. Ohno, T. Shioyama and H. Mine **F** p510
Resistance between row and column terminals in a uniform resistor matrix. A. Tsdaka **G** p165
Robust state estimation in power systems using sparse linear programming. B.C. Clewer, M.R. Irving and M.J.H. Sterling **C** p123
Sub-nanosecond ECL uncommitted cell array for transmission system applications. I. Hawker, M.J. Sheppard, D.L. Scott and P.G. Flavin **G** p60
Synthesis of new canonical digital ladder filters by continued fractions. M. Ismail and H.K. Kim **G** p1
Test point selection methods for the self-testing based analogue fault diagonosis system. C.C. Wu **G** p173 **G** e302
Testable design of RMC networks with universal tests for detecting stuck-at and bridging faults. B.B. Bhattacharya, B. Gupta, S. Sarkar and A.K. Choudhury **E** p155
The Universe Catenet; its protocols and lessons. S.R. Wilbur and P.T. Kirstein **E** p189
The problems posed by electrical power supply to industrial installations. G. Bonnard **B** p335

NOISE AND INTERFERENCE

Adaptive slow frequency-hopping system for land mobile radio. I. Sabbagh and D.G. Appleby **F** p375
Analysis of a multilink system in the presence of noise, cochannel interference and some hardware imperfections. G. Lukatela and I.M. Kostić **F** p511 **F** e557
Identification of linear systems with input and output noise: the Koopmans-Levin method. K.V. Fernando and H. Nicholson **D** p30
Land mobile radio (Editorial). J.D. Parsons **F** p305
Low-frequency noise reduction in time-shared switched-capacitor ladder filters. F. Maloberti and F. Montecchi **G** p39
New method for computation of error probability in PSK systems with interference. I. Korn **F** p461
Performance of SQAM systems in a nonlinearly amplified multichannel interference environment. J.-S. Seo and K. Feher **F** p175
Position, velocity and acceleration estimates from the noisy radar measurements. K.V. Ramachandra **F** d65
Prediction of bit error rate in the presence of impulsive noise: a numerical approach using measured noise data. J.D. Parsons and T. Reyhan **F** p334
RF power injected into the DC yard by an HVDC convertor pole. R.V. DeVore and E.P. Bohley **C** p36
Reduction of threshold noise in FM receivers operating in quasisynchronous field. M.O. Al-Nuaimi **F** p94
Resolution of binary signals for threshold detection in narrowband non-Gaussian noise. A.M. Maras, H.D. Davidson and A.G.J. Holt **F** p187

NONLINEAR SYSTEMS

Adaptive model following control of plants with nonlinearities of known form. G. Ambrosino, G. Celentano and F. Garofalo **D** p11
Basic circuit structures for the synthesis of piecewise polynomial one-port resistors. A. Rueda, J.L. Huertas and A. Rodriguez-Vazquez **G** p123
Design of precision switched-capacitor generalised integrators and their applications to the synthesis of nonlinear networks. A. Cichocki and R. Unbehauen **G** p225

Global and local controllability of nonlinear systems. K. Balachandran D p14
On the dynamical stability of negative conductance free running oscillators. E.F. Calandra and A.M. Sommariva G p143
Single iteration approach to backward differentiation formulas. T.J. Kazmierski and K.G. Nichols G p249
The production of residual currents due to harmonic loading. G.E. Littler C p195

NUMERICAL ANALYSIS

A numerical analysis of the resurf diode structure. P. Walker, J.T. Davies and K.I. Nuttall I p285
Automatic determination of overlay structures. D.M. Velašević E p278
Dual-potential problems in transmission lines with limited or no symmetry. P. Daly H p351
Fast, accurate computational method for asymmetric coupled microstrip parameters. E.A.F. Abdallah and N.A. El-Deeb H p69
Field and power-density calculations in closed microwave systems by three-dimensional finite differences. M. De Pourcq H p360
General integral equation formulation for microstrip antennas and scatterers. J.R. Mosig and F.E. Gardiol H p424
General method for the computation of radiation in stratified media. J.J.H. Wang H p58
On the implementation of sequential circuits with PLA modules. J.I. Acha and J. Calvo E p246
Recent developments in the analysis of reflector antennas. A review. G. Franceschetti and A. Mohsen H p447
TE-scattering from a conducting strip loaded by a dielectric cylinder. M.D.G. Karunaratne, K.A. Michalski and C.M. Butler H p375
TM scattering from a conducting strip loaded by a dielectric cylinder. M.D.G. Karunaratne, K.A. Michalski and C.M. Butler H p115

OPTICAL FIBRES

Editorial Gyrosopes and monomode optical components. B. Culshaw J p249
Effective core area for stimulated Raman scattering in single-mode optical fibres. W.P. Urquart and P.J. Laybourn J p201
Effects of gamma rays on optical transmission of ZrF_4-based fluoride fibres. Y. Ohishi, S. Mitachi, S. Takahashi and T. Miyashita J p114
Electro-optical serrodyne frequency translator for $\lambda = 1.3$ μm. L. Thylén, P. Sjöberg and G.E. Lindqvist J p119
Feasibility of a heterodyne all-fibre optical gyroscope. I.P. Giles J p265
HE_{11}-mode propagation in the cylindrical hollow Bragg fibre. S.L. Arambepola and J.R. Cozens J p207
Hydrogen and deuterium gas-in-glass effects in single-mode optical fibres. A. Marshall, J. Irven and N.J. Pitt J p172
Hydrogen evolution from silicone resins for primary coating applications. S.R. Barnes, S.P. Riley and S.V. Wolfe J p169
Hydrogen in optical cables. R.S. Ashpole, D.L. Lewis, R.J.W. Powell and J.D.S. Hinchliffe J p162
Influence of timing errors on the performance of direct-detection optical-fibre communication systems. J.J. O'Reilly, J.R.F da Rocha and K. Schumacher J p309
Low-loss single-mode optical couplers. G. Georgiou and A.C Boucouvalas J p297
Multiplexed optical fibre interferometers: an analysis based on radar systems. S.A. Al-Chalabi, B. Culshaw, D.E.N. Davies, I.P. Giles and D. Uttam J p150
Nonlinear pulse propagation in optical fibres: a variational approach. D. Anderson J p122
Optical-fibre sensors. G.D. Pitt, P. Extance, R.C. Neat, D.N. Batchelder, R.E. Jones, J.A. Barnett and R.H. Pratt J p214
Semiconductor lasers in advanced interferometric optical-fibre sensors. D. Uttam and B. Culshaw J p184
Serrodyne modulator in a fibre-optic gyroscope. C.J. Kay J p259

OPTICAL SYSTEMS

Mode partition noise in gain-guided lasers and its effect on a multimode fibre-optic system. A.K. Laughton J p359
Multiplexed optical fibre interferometers: an analysis based on radar systems. S.A. Al-Chalabi, B. Culshaw, D.E.N. Davies, I.P. Giles and D. Uttam J p150
Proprietary semicustom regenerator IC for 140 Mbit/s optical transmission systems. A. Stevenson and D.W. Faulkner E/I p62

OPTICAL TRANSMISSION

Analysis of semiconductor laser optical amplifiers. M.J. Adams, J.V. Collins and I.D. Henning J p58
Design techniques for a 565/680 Mbit/s coder/decoder. I.C. Wood, M.S.J. Mudd, D.G. Taylor, P.J. Ward and P.H. Saul E/I p68
HE_{11}-mode propagation in the cylindrical hollow Bragg fibre. S.L. Arambepola and J.R. Cozens J p207
Hydrogen and deuterium gas-in-glass effects in single-mode optical fibres. A. Marshall, J. Irven and N.J. Pitt J p172
Line code design for digital pulse-position modulation. J.J. O'Reilly and Wang Yichao F p441
Nonlinear pulse propagation in optical fibres: a variational approach. D. Anderson J p122
Proprietary semicustom regenerator IC for 140 Mbit/s optical transmission systems. A. Stevenson and D.W. Faulkner E/I p62

OPTICS

Analysis of semiconductor laser optical amplifiers. M.J. Adams, J.V. Collins and I.D. Henning J p58
Effects of gamma rays on optical transmission of ZrF_4-based fluoride fibres. Y. Ohishi, S. Mitachi, S. Takahashi and T. Miyashita J p114
Electro-optical serrodyne frequency translator for $\lambda = 1.3$ μm. L. Thylén, P. Sjöberg and G.E. Lindqvist J p119
Hydrogen and deuterium gas-in-glass effects in single-mode optical fibres. A. Marshall, J. Irven and N.J. Pitt J p172
Hydrogen evolution from silicone resins for primary coating applications. S.R. Barnes, S.P. Riley and S.V. Wolfe J p169
Hydrogen in optical cables. R.S. Ashpole, D.L. Lewis, R.J.W. Powell and J.D.S. Hinchliffe J p162
Low-loss single-mode optical couplers. G. Georgiou and A.C. Boucouvalas J p297
Nonlinear pulse propagation in optical fibres: a variational approach. D. Anderson J p122
Semiconductor lasers in advanced interferometric optical-fibre sensors. D. Uttam and B. Culshaw J p184
Spatial heterodyning of the output signal from an acousto-optic correlator. C. Daniel J p101

OPTIMAL CONTROL

Accuracy of time-optimal control of the diffusion equation using a spatial discretisation technique. A.S.I. Zinober D p239
Optimal regulator design of linear multivariable systems with prescribed pole locations in the presence of system disturbances. A.K. Mahalanabis and J.K. Pal D p231
Response improvements in industrial DC drives derived from optimal analysis. B.J. Cardwell and C.J. Goodman B p171
Sensitivity-reduced optimal discrete linear regulator with prescribed closed-loop eigenvalues. M. Gopal and P. Pratapachandran Nair D p18

OPTIMISATION

A new algorithm for a nonlinear multicriteria decision-making problem. P.V. Rao, T.C. Kong and V.V. Sastry C p118
Accuracy of time-optimal control of the diffusion equation using a spatial discretisation technique. A.S.I. Zinober D p239

OPTOELECTRONICS

'Light' electronics, myth or reality?. J.E. Midwinter J p371
Adaptive control of arterial oxygen pressure of newborn infants under incubator oxygen treatments. A. Sano and M. Kikucki D p205
Analysis of semiconductor laser optical amplifiers. M.J. Adams, J.V. Collins and I.D. Henning J p58
Computer simulation of holographic grating exposure. R.H.M. Dumas and P.J.R. Laybourn J p331
Design and fabrication of 1.5 μm ridge waveguide distributed feedback lasers. A.W. Nelson, L.D. Westbrook and P.J. Fiddyment J p12
Electro-optical serrodyne frequency translator for $\lambda = 1.3$ μm. L. Thylén, P. Sjöberg and G.E. Lindqvist J p119
Electromagnetic theory for optical disc resonators. J. Sarma and K.A. Shore J p325
Fraunhofer interference of a dielectric interface with travelling wave radiation and the consequent reduction in dielectric waveguide bending loss. P.C. Kendall, J.H. Marsh, P.N. Robson and R.C. Hewson-Browne J p354
Measurement of DC electric fields using the electro-optic effect. S.R.M. Robertson and A.J. Rogers J p195
Mode designations of laser beams. Kwai-Man Luk and Ping-Kong Yu J p191
Optoelectronic instrument for contour comparison. A.H. Falkner A p133
Optoelectronic microwave switching. W. Platte J p126
Semiconductor waveguides: analysis of optical propagation in single rib structures and directional couplers. M.J. Robertson, S. Ritchie and P. Dayan J p336

OSCILLATORS

Generation and design of canonic grounded-capacitor variable-frequency *RC*-active oscillators. M. Tavakoli Darkani and B.B. Bhattacharyya G p153
G e224
On the dynamical stability of negative conductance free running oscillators. E.F. Calandra and A.M. Sommariva G p143

OVERHEAD LINES

Analogue simulation of lightning induced voltages and its application for analysis of overhead-ground-wire effects. S. Yokoyama, K. Yamamoto and H. Kinoshita C p208
Lightning performance criteria for electric power systems. R.B. Anderson C p298
Statistical approach to thermal rating of overhead lines for power transmission and distribution. C.F. Price and R.R. Gibbon C d95

OVERVOLTAGES

Induction from underground power circuits into parallel communication services. D.J. Wilcox and M. Conlon C p76
Marx circuit modified by adding a tail sphere gap to generate lightning impulses lasting a few microseconds. A. Carrus A p40
Sensitivity analysis of lightning performance calculations for transmission lines and substations. M.S. Savic C p217

PATTERN RECOGNITION

Real-time on-line pattern recognition of eye position and movement. H.F. Li, F.H.Y. Chan, P.W.F. Poon, W.F. Yan, W.Y. Wong and J.C. Hwang E p293

PERTURBATION THEORY

Robustness of decentralised control systems subject to sensor perturbations. D. Petkovski D p53

PHASING AND PHASE CONTROL

Acquisition behaviour of phase-locked loops employing an imbalanced phase detector in the absence of noise. S.D. Marougi and A.K.M. Easa G p113
Coherent demodulation of pilot tone single sideband with phase-locked TTIB/FFSR processing. A.J. Bateman and J.P. McGeehan F p363

PICTURE PROCESSING AND PATTERN RECOGNITION

Radial histograms as an aid in the inspection of circular objects. E.R. Davies D p158

PLASMAS

An improved theory for the plasma anodisation of silicon. K. Barlow, A. Kiermasz and W. Eccleston I p181

POLYNOMIALS

The inverse problem to matrix polynomial factorisation and its application to circuit design. Z.W. Trzaska G p221

POWER CONVERSION

The design of welder power supplies incorporating self-oscillating high-frequency transformer inverters. G.L. Bredenkamp and P. van Rhyn B p202

POWER ELECTRONICS

50 A 1200 V *n*-channel IGT. H. Yilmaz, L.-S. Chen, W.R. Van Dell, J. Benjamin, M. Chang and K. Owyang I p261
A brief analysis of the transient forward voltage drop in fast diodes. D.F. Courtney I p277
A double etched profile for improved breakdown voltage in *pn*-junctions: theory and practice. A.T. Plumpton and K.J. Haydock I p291
Computer-aided design of power electronic circuits. M.H. Pong and R.D. Jackson B p301
Economic designs for single-layer toroidal inductors. P.N. Murgatroyd and D. Belahrache B p315
Microprocessor-based development system for PWM variable-speed drives. S.R. Bowes and T. Davies B p18
On the steady-state and dynamic characteristics of bipolar transistor power switches in low-loss technology. H.W. van der Broeck, J.D. van Wyk and J.J. Schoeman B p251
One-dimensional numerical simulation of complementary power Schottky structures. T. Rang I p253
Power devices in gallium arsenide. C.J. Atkinson I p264
The design of welder power supplies incorporating self-oscillating high-frequency transformer inverters. G.L. Bredenkamp and P. van Rhyn B p202
The performance of high-voltage field-relieved Schottkey barrier diodes. C.A. Fisher, J.M. Shannon, D.H. Paxman and J.A.G. Slatter I p257

POWER SYSTEM PROTECTION

A decentralised control strategy for dynamic shunt VAr compensation in interconnected power systems. M. Brucoli, F. Torelli and M. Trovato C p229
An innovative analysis of earthing grids for power substations. E.K.-N. Yung C p251
Comparative study of polar and Cartesian co-ordinate algorithms for power-system state-estimation problems. A. Keyhani and A. Abur C p132
Induction from underground power circuits into parallel communication services. D.J. Wilcox and M. Conlon C p76
Lightning performance criteria for electric power systems. R.B. Anderson C p298
Method of using data from computer simulations to test protection equipment. A. Williams and R.H.J. Warren C e29
Microprocessor-based algorithm for high-resistance earth-fault distance protection. Q.S. Yang and I.F. Morrison C d94
Modelling of saturated reactor compensator for system studies. A.E. Davies, J.J. Uriola Sereno and D.M. German C p307
Optimisation of discrete-type load-frequency regulators considering generation-rate constraints. T. Hiyama C d265
Probabilistic load flow considering network outages. A.M. Leite da Silva, R.N. Allan, S.M. Soares and V.L. Arienti C p139
Sensitivity analysis of lightning performance calculations for transmission lines and substations. M.S. Savic C p217

POWER SYSTEMS AND PLANT

A decentralised control strategy for dynamic shunt VAr compensation in interconnected power systems. M. Brucoli, F. Torelli and M. Trovato C p229
A note on some computational aspects of the jump-resonance problem in 3-phase systems. S.N. Bhadra C p248
A statistical method for optimising wind power contribution in a diesel supplied network. A.J. Tsitsovits and L.L. Freris C p269
An innovative analysis of earthing grids for power substations. E.K.-N. Yung C p251
Cluster analysis of power-system networks for array processing solutions. A.O.M. Saleh and M.A. Laughton C p172
Comparative study of polar and Cartesian co-ordinate algorithms for power-system state-estimation problems. A. Keyhani and A. Abur C p132
Decomposed load-flow algorithm suitable for parallel processor implementation. M. Rafian, M.J.H. Sterling and M.R. Irving C p281
Decoupling techniques applied to the design of a controller for an unregulated synchronous machine. D.P. Papadopoulos and P.N. Paraskevopoulos C p277
Design of stabilisers in multimachine power systems. C.M. Lim and S. Elangovan C p146
Design procedure of firing angles for harmonic reduction in a thyristor-controlled reactor by asymmetrical firing control. S. Funabiki and T. Himei C p257
Effect of AC system impedance on the regulation and, hence, the stability margin of HVDC schemes. R. Yacamini and A.I. Taalab C p202
Incorporation of large stochastic sources in the power system. A.K. David C p161
Modelling of saturated reactor compensator for system studies. A.E. Davies, J.J. Uriola Sereno and D.M. German C p307
Online correction dispatch algorithm for dynamic security. K.S. Chandrashekhar C p20
Optimisation of discrete-type load-frequency regulators considering generation-rate constraints. T. Hiyama C d265
Performance comparison of two exact outage simulation techniques. G.B. Jasmon, R.M. Amin and C.Y. Chuan C p285
Placement of static compensators for stability improvement. M. O'Brien and G. Ledwich C p30
Power system stabiliser for large disturbances. A. Ghosh, G. Ledwich, G.S. Hope and O.P. Malik C p14
Reliability and economic assessment of generating systems containing wind energy sources. R.N. Allan and P. Corredor Avella C p8
Robust state estimation in power systems using sparse linear programming. B.C. Clewer, M.R. Irving and M.J.H. Sterling C p123
Subsynchronous resonance damping by specially controlling a parallel HVDC link. R.G. Harley and J.C. Balda C p154
The mismatch theorem and second-order load-flow algorithms. W. Hubbi C p189
The problems posed by electrical power supply to industrial installations. G. Bonnard B p335
The production of residual currents due to harmonic loading. G.E. Littler C p195
Transient stability analysis of large-scale power systems with speed governor via vector Lyapunov functions. H. Shaaban and Lj. Grujić D p45
Variable-structure-system control applied to AGC of an interconnected power system. A. Kumar, O.P. Malik and G.S. Hope C p23

POWER TRANSMISSION AND DISTRIBUTION

Distribution—the years of change. B.S. Townsend C p1
Dynamic load model synthesis. K.P. Wong, W.D. Humpage, T.T. Nguyen and K.K.K. Ho C p179
Electrification current and voltage on a cylindrical object in the presence of an ion flow field in an air stream. M. Hara, M. Yashima, T. Tsutsumi and M. Akazaki A p59
M- to *N*-phase transformer models in phase co-ordinates. A.O.M. Saleh, M.A. Laughton and G.T. Stone C p41
Operating unbalance in long-distance transmission. W.D. Humpage, K.P. Wong and T.T. Nguyen C p67
Phase-variable modelling of saturated reactor compensators with particular reference to long-distance transmission. W.D. Humpage, K.P. Wong, T.T. Nguyen and J.M. McLoughlin C p237
Placement of static compensators for stability improvement. M. O'Brien and G. Ledwich C p30
Predetermination of lateral length to prevent overvoltage problems due to open conductors in three-phase systems. S. Prusty and M. Panda C p49
Probabilistic load flow considering network outages. A.M. Leite da Silva, R.N. Allan, S.M. Soares and V.L. Arienti C p139
RF power injected into the DC yard by an HVDC convertor pole. R.V. DeVore and E.P. Bohley C p36
Statistical approach to thermal rating of overhead lines for power transmission and distribution. C.F. Price and R.R. Gibbon C d95
The New Zealand harmonic legislation. D.A. Bradley, P.J. Morfee and L.A. Wilson B p177

POWER UTILISATION AND INDUSTRIAL APPLICATIONS

Electroheat for industry. E.J. Davies A p77
Statistical analysis of electric-arc-furnace parameter variations. J.D. Lavers and B. Danai C p82
The design of welder power supplies incorporating self-oscillating high-frequency transformer inverters. G.L. Bredenkamp and P. van Rhyn B p202
The problems posed by electrical power supply to industrial installations. G. Bonnard B p335
Theoretical investigations into the use of conducting crucibles in medium-frequency metal melting. M.R. Kargahi and L. Hobson B p269

PROCESS CONTROL

Seam tracker for TIG welding. S. Clark, J. Lucas and A.B. Parker D p164

PRODUCTION ENGINEERING

Design for testability. A p241
Design = quality. True or false?. A p228
Intelligent interfaces for robots. R.H. Weston, J.D. Gascoigne and C.M. Sumpter D p168
Semiautonomous systems in automatic assembly. S.H. Hopkins and P.J. Drazan D p174
Systematic methods for the problem solving process with particular reference to design. S. Blandford and R.P. Hope A p199
The changing technology of electronic components and assemblies. A.D. Hawkins A p311
The economics of innovation. C. Freeman A p213

PROJECT AND PRODUCTION ENGINEERING

Design = quality. True or false?. A p228
The economics of innovation. C. Freeman A p213
The evolution of a modern telecommunications network to the year 2000 and beyond. S. O'Hara A p467
The management of innovation. A p222

RADAR AND RADIONAVIGATION

ASV: the detection of surface vessels by airborne radar. R.A. Smith, R. Hanbury-Brown, A.J. Mould, A.G. Ward and B.A. Walker A p359
Adaptivity and design criteria of a latest-generation MTD processor. E. D'Addio and G. Galati F p58
Antenna systems for ESM applications—a land-mobile example. R.J. Chignell F p252
Application of efficient linear FM matched filtering algorithms to synthetic aperture radar processing. M. Sack, M.R. Ito and I.G. Cumming F p45
Bearing estimation of radar targets using the SPRT statistic. G. Corsini, E. Dalle Mese, G. Marchetti and L. Verrazzani F p133
D – 13: some personal memories of 24th–28th May 1944. M. Ryle A p438
Design of the SPRT for radar target detection. G. Corsini, E. Dalle Mese, G. Marchetti and L. Verrazzani F p139
Development of radar for the Royal Navy 1935–44. J.D.S. Rawlinson A p441
ESM processor system for high pulse density radar environments. J.A.V. Rogers F p621
ESM range advantage. P.W. East F p223
ESM systems applications. W.C. Baker F p206
Eclipsing effects with high-duty-factor waveforms in long-range radar. E.R. Billam F p598
Editorial: Historical Radar. E.H. Putley A p325
Electromagnetic environment synthesis—a tool for ESM system development and support. R.J. Morrow F p298
Electronic support measures (Editorial). P.W. East and J.L. Everett F p205
Experimental analysis of an innovations-based detection algorithm for surveillance radar. P.A.S. Metford and S. Haykin F p18
Experimental vehicle location system using Decca Navigator and dead-reckoning sensors. J.D. Last and C. Scholefield F p388
Formulas for measuring radar ECCM capability. Li Nengjing F d198
H2S and the navigator. E.L. Killip A p399
Historical note on H2S. A.C.B. Lovell A p401
History of fighter direction. N. Orgel A p411
Intercept time and its prediction. A.G. Self and B.G. Smith F p215

Land mobile radio (Editorial). J.D. Parsons F p305
Memories of radar research. J.D. Cockcroft A p327
Miranda—a mobile ESM laboratory. A.F. Dadds F p280
Multiplexed optical fibre interferometers: an analysis based on radar systems. S.A. Al-Chalabi, B. Culshaw, D.E.N. Davies, I.P. Giles and D. Uttam J p150
Oboe: history and development. A.H. Reeves and J.E.N. Hooper A p394
Parameter optimisation for an integrated radar detection and tracking system. Z. Kurniawan and P.J. McLane F p36
Performance evaluation of the modified FBLP method for angle of arrival estimation using real radar multipath data. S. Haykin, T. Greenlay and J. Litva F p159
Position, velocity and acceleration estimates from the noisy radar measurements. K.V. Ramachandra F d65
Probability of direction indications for two unresolved signals. M.J. Archer F p90
Radar detection prediction in sea clutter using the compound *K*-distribution model. S. Watts F p613
Signal sorting in ESM systems. N.J. Whittall F p226
System considerations for naval ESM. D. Wooller F p212
The development of centimetre AI. W.E. Burcham A p385
The new H2Sa. J.B. Smith A p404
The radio war. Sir Robert Cockburn A p423
The story of IFF (identification friend or foe), Lord Bowden of Chesterfield A p435
The work of TRE in the invasion of Europe. J.W.S. Pringle A p340
Time-domain microwave target imaging. W.K. Yeung and S. Evans H p345
Use of metric techniques in ESM data processing. D.R. Wilkinson and A.W. Watson F p229
Use of simulation methods as a design tool in the development of an ESM processing system. P. Hollands F p292
Vampire—a proven capability in tactical direction finding. K.A. Welch F p283

RADIATION

Influence of ionising irradiation on the channel mobility of MOS transistors. A. Bellaouar, G. Sarrabayrouse and P. Rossel I p184

RADIO WAVES

Problems of mobile HF communication and techniques for performance improvement. M. Darnell F p433

RADIO-WAVE PROPAGATION (IONOSPHERIC)

Exact ray path calculations in a modified Bradley/Dudeney model ionosphere. J.D. Milsom H p33
Wave-hop method of calculating propagation at LF and VLF, and stationary phase. W.C. Bain H p138

RADIO-WAVE PROPAGATION (MICROWAVE)

Effect of common volume models on bistatic scattering and interface calculations. D.G. Charlton, A.R. Holt and B.G. Evans H p440
Model of rainfall-rate distribution for radio system design. F. Moupfouma H p39

RADIO-WAVE PROPAGATION (TROPOSPHERIC)

An alternative formulation for an optimum beamformer with robustness capability. M.H. Er and A. Cantoni F p447
Application of a statistical raindrop canting angle model on terrestrial and satellite links. J. Howard F p119
Dimensioning technique for meteor-burst communication systems. H. Nes F p505
Effect of common volume models on bistatic scattering and interface calculations. D.G. Charlton, A.R. Holt and B.G. Evans H p440
Estimation of HF basic circuit reliability from modal parameters. R.Y. Liu and P.A. Bradley F p111
Large area characterisation of urban UHF multipath propagation and its relevance to the performance bounds of mobile radio systems. A.S. Bajwa and J.D. Parsons F p99
UHF wideband statistical model and simulation of mobile radio multipath propagation effects. A.S. Bajwa F p327

RADIOCOMMUNICATION

900 MHz digital cordless telephone. P.D. White, M.K. Gurcan and R.J.G. MacNamee F p425
Adaptive slow frequency-hopping system for land mobile radio. I. Sabbagh and D.G. Appleby F p375
Bit error distribution in digital mobile radiocommunication—comparison between field measurements and fading simulation. R.W. Lorenz and H.-J. Gelbrich F p343
Boundaries between radio cells—influence of buildings and vegetation. K. Loew F p321
Cellular mobile packet radio using multiple-channel CSMA. N.D. Wilson and S.S. Rappaport F p517
Coherent demodulation of pilot tone single sideband with phase-locked TTIB/FFSR processing. A.J. Bateman and J.P. McGeehan F p363
Definition of a cellular mobile radio system. C.J. Hughes and M.S. Appleby F p416
Digital modems for land mobile radio. A.P. Clark F p348
Dimensioning technique for meteor-burst communication systems. H. Nes F p505
Effect of adjacent channel interference and frequency-selective fading on outage of digital radio. I. Korn F p604
Electronic support measures (Editorial). P.W. East and J.L. Everett F p205
Experimental evaluation of packet error rates for the 850 MHz mobile channel. H.M. Hafez, A.U.H. Sheikh and B. McPhail F p366
HF spectral occupancy and frequency planning. N.F. Wong, G.F. Gott and L.W. Barclay F p548
High-user-density digital cellular mobile radio systems. R. Steele and V.K. Prabhu F p396
Large area characterisation of urban UHF multipath propagation and its relevance to the performance bounds of mobile radio systems. A.S. Bajwa and J.D. Parsons F p99
Prediction of bit error rate in the presence of impulsive noise: a numerical approach using measured noise data. J.D. Parsons and T. Reyhan F p334
Problems of mobile HF communication and techniques for performance improvement. M. Darnell F p433
Propagation at 500 MHz for mobile radio. B.R. Davis and R.E. Bogner F p307
Reduction of threshold noise in FM receivers operating in quasisynchronous field. M.O. Al-Nuaimi F p94
Relationship between base station transmitter multicoupling requirements and frequency planning strategies for cellular mobile radio. J.G. Gardiner and S.A. Kotsopoulos F p384
Simple simultaneous carrier and bit synchronisation system for narrowband data transmission. J.P. McGeehan and A.J. Bateman F p69
Sky-hooks, fish-warmers and hub-caps; milestones in satellite communications. A.W. Rudge F p1
The tracking performance of a narrowband phase-locked loop in the mobile multipath environment. J.P. McGeehan and J.P.H. Sladen F p73
Towards a high-capacity digital cellular mobile radio system. R. Steele F p405
UHF wideband statistical model and simulation of mobile radio multipath propagation effects. A.S. Bajwa F p327

RADIONAVIGATION

Experimental analysis of an innovations-based detection algorithm for surveillance radar. P.A.S. Metford and S. Haykin F p18

RAILWAY ELECTRIFICATION AND TRANSPORTATION

A gate-turn-off thyristor chopper for traction drives. J. Allan, B. Mellitt and W.Y. Wu B p245
Analysis of dielectric measurements on switchgear bushings in British Rail 25 kV electrification switching stations. A. Bradwell and G.A. Bates B p1
Remote control of traction power over two wires. C.R. Avery and G. Crawshaw B e60

RECEIVERS

Channelised integrating ESM receivers using a Bragg cell. R. Bowman F p275
Detection of complex and simultaneous signals using an instantaneous frequency measurement receiver. J.P.Y. Lee F p267
ESM range advantage. P.W. East F p223
Error propagation in decision feedback receivers. J.J. O'Reilly and A.M. de Oliveira Duarte F p561
Miranda—a mobile ESM laboratory. A.F. Dadds F p280
Performance of generalised AMF receivers for continuous phase modulation. A. Svensson and C.-E. Sundberg F p541
Sensitivity of crystal video receivers. J. Edwards F p233
Simplified technique for bounding error statistics for DFB receivers. A.M. de Oliveira Duarte and J.J. O'Reilly F p567

RELAYS

Method of using data from computer simulations to test protection equipment. A. Williams and R.H.J. Warren C e29
w-domain design of single- and double-valued relay control systems. C.P. Lewis D p219

RELIABILITY

Bounded-set approach to the evaluation of the reliability of fault-tolerant systems. Part 1: methodology, powered spares. Y.W. Yak, T.S. Dillon and K.E. Forward E p217
Estimation of HF basic circuit reliability from modal parameters. R.Y. Liu and P.A. Bradley F p111
Reliability and economic assessment of generating systems containing wind energy sources. R.N. Allan and P. Corredor Avella C p8
Thermal impedance testing of high-speed gate arrays. E.R. Brown, K. Beasley and W.L. Barber G p277

RELUCTANCE MOTORS

Frequency-response identification of a linear helical reluctance motor. R.J.A. Paul, P.J. Fleming and A.M. Elsamahy B p101

REVIEWS OF PROGRESS

William Henley, pioneer electrical instrument maker and cable manufacturer, 1813 to 1882. A.F. Anderson A p249

ROBOTICS

A sensory-based robotic safety system. J.H. Graham and J.F. Meagher D p183
A unified approach to the decoupled discrete adaptive control of manipulators. D.P. Stoten D p151
Development of computer-controlled machinery for the making up of garments. R. Vitols, B.J.M. Murphy, G.R. Wray, J.E. Baker and T.G. King D p178
Direct drive system for an industrial robot using a brushless DC motor. S. Williams B p53
Frequency response multivariable control of robotic manipulators. S.J. Williams D p144
Intelligent interfaces for robots. R.H. Weston, J.D. Gascoigne and C.M. Sumpter D p168
Practical application of a heuristic fuzzy rule-based controller to the dynamic control of a robot arm. N.J. Mandić, E.M. Scharf and E.H. Mamdani D p190
Radial histograms as an aid in the inspection of circular objects. E.R. Davies D p158
Robotics (Editorial). P.G. Davey and R.W. Daniel. D p133
Robust nonlinear feedback control for robotic manipulators. V.D. Tourassis and C.P. Neuman D p134
Seam tracker for TIG welding. S. Clark, J. Lucas and A.B. Parker D p164
Semiautonomous systems in automatic assembly. S.H. Hopkins and P.J. Drazan D p174

SATELLITE LINKS AND SPACE COMMUNICATION

Analysis of a multilink system in the presence of noise, cochannel interference and some hardware imperfections. G. Lukatela and I.M. Kostić F p511
F e557

Application of a statistical raindrop canting angle model on terrestrial and satellite links. J. Howard F p119
Doppler method for improving tracking accuracy of satellite receiving stations. R.J.H. Brush, P.E. Baylis and N. Tawel F p537
Intermodulation owing to quantisation of two-carrier-level SCPC system. M.T. Abuelma'atti G p68
Optimisation of contoured beams for satellite antennas. P.D. Patel and K.K. Chan H p400
Shaped dual-offset antenna with dielectric cone feed for DBS reception. E.E. Voglis and A.D. Olver H p110
Sky-hooks, fish-warmers and hub-caps; milestones in satellite communications. A.W. Rudge F p1
The Universe Catenet; its protocols and lessons. S.R. Wilbur and P.T. Kirstein E p189

SCHOTTKY-BARRIER DEVICES

One-dimensional numerical simulation of complementary power Schottky structures. T. Rang I p253
Operation of a single-phase CCD on GaAs at 560 MHz. A.J. Hayes, J.T. Davies and W. Eccleston I p34
The performance of high-voltage field-relieved Schottkey barrier diodes. C.A. Fisher, J.M. Shannon, D.H. Paxman and J.A.G. Slatter I p257

SEMICONDUCTOR DEVICES AND MATERIALS

50 A 1200 V *n*-channel IGT. H. Yilmaz, L.-S. Chen, W.R. Van Dell, J. Benjamin, M. Chang and K. Owyang I p261
A Model for MOS transistors. G.S. Bhatti, B.K. Jones and P.C. Russell I p248
A brief analysis of the transient forward voltage drop in fast diodes. D.F. Courtney I p277
A comparison of the photovoltaic and electroluminescent effects in GaP/Langmuir-Blodgett film diodes. M.C. Petty, J. Batey and G.G. Roberts I p133
A digital dual-slope analogue to digital convertor. H. Jamal and F.E. Holmes G p149
A double etched profile for improved breakdown voltage in *pn*-junctions: theory and practice. A.T. Plumpton and K.J. Haydock I p291
A numerical analysis of the resurf diode structure. P. Walker, J.T. Davies and K.I. Nuttall I p285
An improved theory for the plasma anodisation of silicon. K. Barlow, A. Kiermasz and W. Eccleston I p181
Asymptotes for boundary determined current density of PIN diodes. J. McGhee, I.A. Henderson and M. Saffari I p272
Characterisation and modelling of SIPOS on silicon high-voltage devices. J.N. Sandoe, J.R. Hughes and J.A.G. Slatter I p281
Computer-aided thermal analysis of reverse-biased PIN diodes. V. Ramamurthy, K.N. Bhat and D. Kakati I d170
Factors affecting impact ionisation in multilayer avalanche photodiodes. B.K. Ridley J p177
Failure modes and mechanisms for VLSI ICs—a review. F. Fantini and C. Morandi G p74
Faults and fault effects in NMOS circuits—impact on design for testability. N. Burgess, R.I. Damper, S.J. Shaw and D.R.J. Wilkins G p82
GTO with monolithic antiparallel diode. E. Huang and J.P. Barnes I p245
High-voltage high-current GTO thyristors. P.D. Taylor, W.J. Findlay and R.T. Denyer I p238
Layout related deformations of meander-type MOS transistor *I/V* characteristics. W. Maly and M. Syrzycki I p13
Microelectronic ion sensors: A critical survey. R.G. Kelly and A.E. Owen I p227
Modelling bulk and surface recombination in the sidewall space-charge layer of an emitter-base junction. D.J. Roulston and A.A. Eltoukhy I p205
Modelling of a new high current gain bipolar transistor with *n*-doped hydrogenated silicon emitter. O. Bonnaud and P. Viktorovitch I p17
Monte Carlo particle simulation of a GaAs MESFET with a gate trench sloping towards the source. C. Moglestue I p217
Operation of a single-phase CCD on GaAs at 560 MHz. A.J. Hayes, J.T. Davies and W. Eccleston I p34
Optimised travelling-wave amplifier with two parallel-gate transmission lines. U. Christ and F. Arndt I p140
Photovoltaic effects of GaAs MESFET layers. G.J. Papaioannou, J.A. Kaliakatsos, P.C. Euthymiou and J.R. Forrest I p167
Power devices in gallium arsenide. C.J. Atkinson I p264
Quasisaturation effect in high-voltage VDMOS transistors. J.L. Sanchez, M. Gharbi, H. Tranduc and P. Rossel I p42
Semiconductor waveguides: analysis of optical propagation in single rib structures and directional couplers. M.J. Robertson, S. Ritchie and P. Dayan J p336
Simulation of near ballistic electron transport in a submicron GaAs diode with $Al_xGa_{1-x}As$/GaAs heterojunction cathode. K. Tomizawa, Y. Awano, N. Hashizume and M. Kawashima I p37
Sub-nanosecond ECL uncommitted cell array for transmission system applications. I. Hawker, M.J. Sheppard, D.L. Scott and P.G. Flavin G p60
Temperature measurements of thin films on substrates. D. de Cogan, A.F. Howe and P.W. Webb I p143
Testability and self-test in NMOS and CMOS VLSI signal processors. A.F. Murray and P.B. Denyer G p93
The UK5000 array. B. Cosgrove G p90
The performance of high-voltage field-relieved Schottkey barrier diodes. C.A. Fisher, J.M. Shannon, D.H. Paxman and J.A.G. Slatter I p257
Thermal impedance testing of high-speed gate arrays. E.R. Brown, K. Beasley and W.L. Barber G p277
Threshold shift of NMOS transistors due to high energy arsenic source/drain implantation. K.A. Sabine, G.A.J. Amaratunga and A.G.R. Evans I p163
Trends in the application of semiconductor technology. J.S. Arnold E/I p50

SEMICONDUCTOR LASERS

35 mW CW single-frequency injection laser with an external dispensive cavity. V.Yu. Bazhenov, A.P. Bogatov, P.G. Eliseev, O.G. Okhotnikov, G.T. Pak, M.P. Rakhvalsky, M.S. Soskin, V.B. Taranenko and K.A. Khairetdinov J p9
Analysis of semiconductor laser optical amplifiers. M.J. Adams, J.V. Collins and I.D. Henning J p58
Bistability and instability in the output of a twin GaAs/GaAlAs diode external cavity ring laser. J. McInerney, L. Reekie and D.J. Bradley J p90
Critical analysis and correction of the rate equation for the injection laser. H.S. Sommers, Jr J p38
Design and fabrication of 1.5 μm ridge waveguide distributed feedback lasers. A.W. Nelson, L.D. Westbrook and P.J. Fiddyment J p12
Design considerations of the metal-clad ridge-waveguide laser with distributed feedback. R. Schimpe J p133
High-power lasers of the twin-ridge-substrate type. M. Wada, K. Hamada, H. Shimizu, M. Kume, F. Tajiri, K. Itoh and G. Kano J p3
Intensity distribution of semiconductor laser emission due to the excitation of satellite modes. R. Schimpe J p146
Intensity fluctuation of 1.5 μm InGaAsP/InP distributed feedback lasers involving the optical feedback effect. Y. Yoshikuni, H. Kawaguchi and T. Ikegami J p20
Linewidth calculations for distributed-feedback lasers. M.J. Adams and I.D. Henning J p136
Measurement and analysis of planar stripe-geometry GaAlAs/GaAs heterojunction laser wavefronts and their variation with pumping current. M.A. Manko, B.I. Makhsudov, G.T. Mikaelyan and Pham Van Hoi J p64
Model for semiconductor laser structures incorporating longitudinal and transverse variations. K.A. Shore J p52
Optical switching properties of semiconductor lasers: analysis in canonical form. K.A. Shore J p85
Optically excited (Ga, In, As, P) film lasers. R.P. Salathé J p77
Prediction of self-sustained oscillations in buried-heterostructure stripe lasers. B.S. Poh I p29
Principles of semiconductor laser modelling. J. Buus J p42
Relative contribution of carrier diffusion and spontaneous emission to the strength and damping of relaxation oscillations in InGaAsP/InP lasers. D. Leclerc, P. Brosson, B. Fernier and J. Benoit J p28
Self-oscillation frequency characteristics of a GaAs/GaAlAs *pn-pn* laser. W. Shou-wu, Z. Quan-sheng, L. Zhao-yin and W. Rong-han J p69
Semiconductor Raman laser. K. Suto and J. Nishizawa J p81
Semiconductor injection lasers (editorial). A.G. Steventon J p2
Semiconductor lasers in advanced interferometric optical-fibre sensors. D. Uttam and B. Culshaw J p184
Temperature-dependent lifetests of IRW lasers operating at 1.3 μm. A. Rosiewicz, B.R. Butler and R.E.P. Hinton J p97
Time dependent analysis of active and passive optical bistability in semiconductors. M.J. Adams J p343
Transient time-averaged spectra of rapidly-modulated semiconductor lasers. M. Osiński and M.J. Adams J p34

SIGNAL PROCESSING

Application of a systolic array to adaptive beamforming. C.R. Ward, A.J. Robson, P.J. Hargrave and J.G. McWhirter F e110
Application of efficient linear FM matched filtering algorithms to synthetic aperture radar processing. M. Sack, M.R. Ito and I.G. Cumming F p45
Asymptotic results for eigenvector methods. D.J. Jeffries and D.R. Farrier F p589
Bit-level systolic array implementation of the Winograd Fourier transform algorithm. J.S. Ward, J.V. McCanny and J.G. McWhirter F p473
Class of binary cipher sequences with best possible autocorrelation function. L.C. Quynh and S. Prasad F p576
Detection of complex and simultaneous signals using an instantaneous frequency measurement receiver. J.P.Y. Lee F p267
Generalised WPD procedure for microprocessor-based signal detection. V.M. Milutinović F p27
Line code design for digital pulse-position modulation. J.J. O'Reilly and Wang Yichao F p441
Maximum entropy processing of band-limited spectra. Part 1: Noise-free case. D.R. Farrier and D.J. Jeffries F p491
Maximum entropy processing of band-limited spectra. Part 2: Recovering a spectrum from noisy measurements. D.R. Farrier and D.J. Jeffries F p498
Method for designing half-band delta-modulation FIR filters. V. Anastassopoulos, N. Kouvaras and T. Deliyannis F p13
New design procedure for digital filters based on a finite-state machine implementation. I.K. Proudler and P.J.W. Rayner F p581
Probability of direction indications for two unresolved signals. M.J. Archer F p90
Spatial heterodyning of the output signal from an acousto-optic correlator. C. Daniel J p101
Spread-spectrum waveforms simplifying transform domain signal processing. A. Baier, P.W. Baier and M. Pandit F p558
Systolic implementations for deconvolution, DFT and FFT. T. Willey, R. Chapman, H. Yoho, T.S. Durrani and D. Preis F p466
Testability and self-test in NMOS and CMOS VLSI signal processors. A.F. Murray and P.B. Denyer G p93
Timed gradient adaptive lattice equaliser. M.J. Rutter and P.M. Grant F p181
Use of simulation methods as a design tool in the development of an ESM processing system. P. Hollands F p292

SIMULATION

Analogue simulation of lightning induced voltages and its application for analysis of overhead-ground-wire effects. S. Yokoyama, K. Yamamoto and H. Kinoshita C p208
Bit error distribution in digital mobile radiocommunication—comparison between field measurements and fading simulation. R.W. Lorenz and H.-J. Gelbrich F p343
Bumpless monotonic bicubic interpolation for MOSFET device modelling. T. Shima I p147
Dual model of a DC machine with gyrators. R.S. Ramshaw and G. Xie B p57
Efficient tolerance analysis using control variates. R.S. Soin and P.J. Rankin G p131
Electromagnetic environment synthesis—a tool for ESM system development and support. R.J. Morrow F p298
Faults and fault effects in NMOS circuits—impact on design for testability. N. Burgess, R.I. Damper, S.J. Shaw and D.R.J. Wilkins G p82
Monte Carlo particle simulation of a GaAs MESFET with a gate trench sloping towards the source. C. Moglestue I p217
One-dimensional numerical simulation of complementary power Schottky structures. T. Rang I p253
Study of saturation conduction in short-channel MOS transistors by numerical simulation. K.Y. Tong I p173
UHF wideband statistical model and simulation of mobile radio multipath propagation effects. A.S. Bajwa F p327
Use of simulation methods as a design tool in the development of an ESM processing system. P. Hollands F p292

SOLAR CELLS

A comparison of the photovoltaic and electroluminescent effects in GaP/Langmuir-Blodgett film diodes. M.C. Petty, J. Batey and G.G. Roberts I p133
An accurate and simple technique of determination of the maximum power point and measurement of some solar cell parameters. S. Deb, K. Maitra and A. Roychoudhuri I p157 I e271
Effects of dust on the performance of concentrator photovoltaic cells. M.S. El-Shobokshy, A. Mujahid and A.K.M. Zakzouk I p5

SPACE COMMUNICATION

Sky-hooks, fish-warmers and hub-caps; milestones in satellite communications. A.W. Rudge F p1

STABILISERS

An adaptive power-system stabiliser which cancels the negative damping torque of a synchronous generator. D.P.Sen Gupta, N.G. Narahari, I. Boyd and B.W. Hogg C p109
Design of stabilisers in multimachine power systems. C.M. Lim and S. Elangovan C p146

STABILITY

Comments on a simplified analytical stability test for systems with delay. N. MacDonald D p237
Effect of AC system impedance on the regulation and, hence, the stability margin of HVDC schemes. R. Yacamini and A.I. Taalab C p202
On stability tests for two-dimensional digital filters. M.N.S. Swamy, L.M. Roytman and E.I. Plotkin G p57
On the dynamical stability of negative conductance free running oscillators. E.F. Calandra and A.M. Sonmariva G p143
Transient stability analysis of large-scale power systems with speed governor via vector Lyapunov functions. H. Shaaban and Lj. Grujić D p45

STANDARDISATION AND STANDARDS

Distribution—the years of change. B.S. Townsend C p1
History of the electrical units and early standards. A.C. Lynch A p564

SUBMILLIMETRE SYSTEMS

Dual-mode horns at millimetre and submillimetre wavelengths. G.A. Ediss H p215
Quasioptical components for 230 GHz and 460 GHz. G.A. Ediss, Wang. S-J and N.J. Keen H p99

SWITCHES AND SWITCHING THEORY

Delay analysis of a modified cut-through switching for multipacket messages. M. Ilyas and H.T. Mouftah E p45
On the steady-state and dynamic characteristics of bipolar transistor power switches in low-loss technology. H.W. van der Broeck, J.D. van Wyk and J.J. Schoeman B p251
Optoelectronic microwave switching. W. Platte J p126

SWITCHGEAR

Analysis of dielectric measurements on switchgear bushings in British Rail 25 kV electrification switching stations. A. Bradwell and G.A. Bates B p1

SYNCHRONOUS GENERATORS

An adaptive power-system stabiliser which cancels the negative damping torque of a synchronous generator. D.P.Sen Gupta, N.G. Narahari, I. Boyd and B.W. Hogg C p109
Synchronous machines with contrarotating armatures: steady-state behaviour. W.J. Bonwick and A.L.D. Ah Fock B p195
Turbine-generator steady-state reactances. D.C. Macdonald, A.B.J. Reece and P.J. Turner C p101

SYNCHRONOUS MOTORS

A miniature transformer-coupled high-speed synchronous motor. D.E. Hesmondhalgh and D. Tipping B p319
Microprocessor control of a 'hidden-link' convertor drive. P.H. Chappell and R.M. Davis B p87
Parameters and performance of a high-field permanent-magnet synchronous. B.J. Chalmers, S.A. Hamed and G.D. Baines B p117
Starting of convertor-fed synchronous machine drives. A.C. Williamson and K.M.S. Al-Khalidi B p209
Synchronous machines with contrarotating armatures: steady-state behaviour. W.J. Bonwick and A.L.D. Ah Fock B p195
Torque availability from small synchronous motors using high coercivity magnets. D.E. Hesmondhalgh and D. Tipping B p279

SYSTEM PROTECTION

Temperature measurements of thin films on substrates. D. de Cogan, A.F. Howe and P.W. Webb I p143

TELECOMMUNICATION

Acquisition behaviour of phase-locked loops employing an imbalanced phase detector in the absence of noise. S.D. Marougi and A.K.M. Easa G p113
Algorithms for frame alignment — some comparisons. E.V. Jones and M.N. Al-Subbagh F p529
Code-division multiplex technique using bridge functions. I. Haidar and R.L. Brewster F p480
Duplex telegraphy and the artificial line: the beginnings of system modelling. P. Strange A p543
Error propagation in decision feedback receivers. J.J. O'Reilly and A.M. de Oliveira Duarte F p561
New method for computation of error probability in PSK systems with interference. I. Korn F p461
Optimal channel assignment in a packet-switching network with a conflict-free multiple-access scheme. K. Ohno, T. Shioyama and H. Mine F p510
Performance of generalised AMF receivers for continuous phase modulation. A. Svensson and C.-E. Sundberg F p541
Resolution of binary signals for threshold detection in narrowband non-Gaussian noise. A.M. Maras, H.D. Davidson and A.G.J. Holt F p187
Simplified technique for bounding error statistics for DFB receivers. A.M. de Oliveira Duarte and J.J. O'Reilly F p567
Spread-spectrum waveforms simplifying transform domain signal processing. A. Baier, P.W. Baier and M. Pandit F p558
Timed gradient adaptive lattice equaliser. M.J. Rutter and P.M. Grant F p181

TELECOMMUNICATION TRAFFIC

Sub-nanosecond ECL uncommitted cell array for transmission system applications. I. Hawker, M.J. Sheppard, D.L. Scott and P.G. Flavin G p60

TELEPHONE EXCHANGES AND NETWORKS

Wideband echo suppression using an improved bilateral opto-isolator circuit. S. Yoneda, K. Tsutsui and Y. Fukui F p153

TELEPHONY

Wideband echo suppression using an improved bilateral opto-isolator circuit. S. Yoneda, K. Tsutsui and Y. Fukui F p153

TELEVISION

The history of television for public showing in cinemas in the United Kingdom. R.W. Burns A p553

THYRISTORS

A gate-turn-off thyristor chopper for traction drives. J. Allan, B. Mellitt and W.Y. Wu B p245
Digital controller for thyristor current source. F.L. Luo, R.D. Jackson and R.J. Hill B p46
GTO with monolithic antiparallel diode. E. Huang and J.P. Barnes I p245
High-voltage high-current GTO thyristors. P.D. Taylor, W.J. Findlay and R.T. Denyer I p238

TOPOLOGY

A by-inspection analysis of SC networks using direct topological rules. J.J. Mulawka and G.S. Moschytz G p255

TORQUE

Estimation of torque pulsation due to the behaviour of a convertor and an inverter in a brushless DC-drive system. S. Funabiki and T. Himei B p215
Torque availability from small synchronous motors using high coercivity magnets. D.E. Hesmondhalgh and D. Tipping B p279

TRACTION

DC traction motor with slotless armature. E. Spooner B p61

TRANSFORMERS

A new algorithm for a nonlinear multicriteria decision-making problem. P.V. Rao, T.C. Kong and V.V. Sastry C p118
A review of paper aging in power transformers. D.H. Shroff and A.W. Stannett C p312
M- to *N*-phase transformer models in phase co-ordinates. A.O.M. Saleh, M.A. Laughton and G.T. Stone C p41
Nickel and chromium plated terminals in current transformer circuits. P.J. Betts A p178
Probabilistic load flow considering network outages. A.M. Leite da Silva, R.N. Allan, S.M. Soares and V.L. Arienti C p139
Some aspects of transformer core loss. P.H.G. Allen A p113

TRANSIENTS

A frequency-dependent transmission line model for electromagnetic transient studies. S.R. Naidu and F.N. de Lima C p294
Single- to 3-phase transient phase conversion in induction motor drives. P.G. Holmes B p289

TRANSISTORS

50 A 1200 V *n*-channel IGT. H. Yilmaz, L.-S. Chen, W.R. Van Dell, J. Benjamin, M. Chang and K. Owyang I p261
A Model for MOS transistors. G.S. Bhatti, B.K. Jones and P.C. Russell I p248
A load-pull technique for the determination of transistor *S* parameters under large-signal conditions. M.A. Osborne and G.B. Morgan H p419
Chopper control of DC disc-armature motor using power MOSFETs. R.J. Hill and P. Cork B p93
Comparison of five high speed bistables by computer simulation. D.M. Russ and D.W. Faulkner I p210
Influence of ionising irradiation on the channel mobility of MOS transistors. A. Bellaouar, G. Sarrabayrouse and P. Rossel I p184
LDMOS transistors with implanted and deposited surface layers. K. Board and M. Darwish I p177
Layout related deformations of meander-type MOS transistor *I/V* characteristics. W. Maly and M. Syrzycki I p13
Modelling bulk and surface recombination in the sidewall space-charge layer of an emitter-base junction. D.J. Roulston and A.A. Eltoukhy I p205
Modelling of a new high current gain bipolar transistor with *n*-doped hydrogenated silicon emitter. O. Bonnaud and P. Viktorovitch I p17
Monte Carlo particle simulation of a GaAs MESFET with a gate trench sloping towards the source. C. Moglestue I p217
Small signal bias dependent model for high frequency transistors. K. Bharath Kumar I p201
Study of saturation conduction in short-channel MOS transistors by numerical simulation. K.Y. Tong I p173

TRANSMISSION AND DISTRIBUTION PLANT

An innovative analysis of earthing grids for power substations. E.K.-N. Yung C p251
Current instability and chopping with arcs in series. D. Andersson C p224

Design procedure of firing angles for harmonic reduction in a thyristor-controlled reactor by asymmetrical firing control. S. Funabiki and T. Himei C p257
Distribution—the years of change. B.S. Townsend C p1
M- to *N*-phase transformer models in phase co-ordinates. A.O.M. Saleh, M.A. Laughton and G.T. Stone C p41
Operating unbalance in long-distance transmission. W.D. Humpage, K.P. Wong and T.T. Nguyen C p67
Phase-variable modelling of saturated reactor compensators with particular reference to long-distance transmission. W.D. Humpage, K.P. Wong, T.T. Nguyen and J.M. McLoughlin C p237
Predetermination of lateral length to prevent overvoltage problems due to open conductors in three-phase systems. S. Prusty and M. Panda C p49
RF power injected into the DC yard by an HVDC convertor pole. R.V. DeVore and E.P. Bohley C p36

TRANSMISSION LINES

A frequency-dependent transmission line model for electromagnetic transient studies. S.R. Naidu and F.N. de Lima C p294
Dual-potential problems in transmission lines with limited or no symmetry. P. Daly H p351
Electrification current and voltage on a cylindrical object in the presence of an ion flow field in an air stream. M. Hara, M. Yashima, T. Tsutsumi and M. Akazaki A p59
Estimation of the characteristic impedance of a transmission line by variational methods. T.D. Tsiboukis H p171
Generalised transmission line model for microstrip patches. A.K. Bhattacharyya and R. Garg H p93
Multiconductor transmission-line model for the line-end coil of large AC machines. P.G. McLaren and H. Oraee B p149 B d278
Operating unbalance in long-distance transmission. W.D. Humpage, K.P. Wong and T.T. Nguyen C p67
Reactive nonlinearities in transmission-line models. L.A. Newcombe and J.E. Sitch A p95
Rigorous field theory analysis of quasiplanar waveguides. J. Bornemann H p1
Some extensions of the concept of complementary electromagnetic structures. B.D. Popović and A. Nešić H p131
Upper and lower bounds on mode capacitances for a large class of anisotropic multilayered microstrip-like transmission lines. F. Medina and M. Horno H p157

TURBOGENERATORS

Turbine-generator steady-state reactances. D.C. Macdonald, A.B.J. Reece and P.J. Turner C p101

UNDERGROUND CABLES

Induction from underground power circuits into parallel communication services. D.J. Wilcox and M. Conlon C p76

VERY LARGE SCALE INTEGRATION

Bumpless monotonic bicubic interpolation for MOSFET device modelling. T. Shima I p147
Design methodology for self-timed VLSI systems. P.F. Lister and A.M. Alhelwani E p25
Design techniques for a 565/680 Mbit/s coder/decoder. I.C. Wood, M.S.J. Mudd, D.G. Taylor, P.J. Ward and P.H. Saul E/I p68
Experiment to investigate self-testing techniques in VLSI. T.W. Williams, R.G. Walther, P.S. Bottorff and S. Das Gupta G p105
Failure modes and mechanisms for VLSI ICs—a review. F. Fantini and C. Morandi G p74
Low-cost residue codes and their application to self-checking VLSI systems. I.L. Sayers and D.J. Kinniment E p197
Modelling of a new high current gain bipolar transistor with *n*-doped hydrogenated silicon emitter. O. Bonnaud and P. Viktorovitch I p17
On the implementation of sequential circuits with PLA modules. J.I. Acha and J. Calvo E p246
Proprietary semicustom regenerator IC for 140 Mbit/s optical transmission systems. A. Stevenson and D.W. Faulkner E/I p62
STRICT: a design language for strongly typed recursive integrated circuits. R.H. Campbell, A.M. Koelmans and M.R. McLauchlan E/I p108
Simple and continuous MOSFET models for the computer-aided design of VLSI. G.T. Wright I p187
Systolic implementations for deconvolution, DFT and FFT. T. Willey, R. Chapman, H. Yoho, T.S. Durrani and D. Preis F p466
The Megacell concept: an approach to painless custom design. J.S. Brothers, J.W. Tomkins and J.S. Williams E/I p91
Thermal impedance testing of high-speed gate arrays. E.R. Brown, K. Beasley and W.L. Barber G p277
VLSI process compatible 8 bit CMOS DAC. P.H. Saul, D.W. Howard and C.J. Greenwood E/I p99
VLSI: the design problem. G.V.R. Bolton E/I p86

VOLTAGE REGULATORS

An adaptive power-system stabiliser which cancels the negative damping torque of a synchronous generator. D.P.Sen Gupta, N.G. Narahari, I. Boyd and B.W. Hogg C p109

WAVEGUIDES AND WAVEGUIDE COMPONENTS

18–26 GHz finline resonance isolators using hexagonal ferrites. J. Helszajn and W. Thorpe H p73
Asymptotic study of rotationally symmetric waves in a circular anisotropic waveguide. K.P. Ivanov and G.N. Georgiev H p261
Circular-electric-mode hybrid coupler. A.J. Sangster and D.J. McIntosh H p164
Coaxial waveguide to circular cylindrical waveguide junction. A.J. Sangster and D.J. McIntosh H p203
Coaxially fed hollow probe in a rectangular waveguide. A.G. Williamson H p273
Design of a 90° 12 GHz Faraday rotator polariser using a cavity technique. J. Helszajn H p237
Eigenfrequency distributions in multimode cavities. R.F.B. Turner, W.A.G. Voss, W.R. Tinga and H.P. Baltes H p82
Finite-element analysis of helical phase shifters. S. Kal and N.B. Chakraborti H p231
Finite-element analysis of the shielded cylindrical dielectric resonator. P.S. Kooi, M.S. Leong and A.L. Satya Prakash H p7
Fraunhofer interference of a dielectric interface with travelling wave radiation and the consequent reduction in dielectric waveguide bending loss. P.C. Kendall, J.H. Marsh, P.N. Robson and R.C. Hewson-Browne J p354
Intrinsic mode theory of tapered optical waveguides. J.M. Arnold, A. Belghoraf and A. Dendane J p314
Locating and coupling fibres to integrated stripe waveguides. J.P.G. Bristow, P.J. Laybourn, A. McDonach and A.C.G. Nutt J p291
New techniques for absolute temperature compensation of tunable resonant cavities. S.A. Adeniran H p471
Nonreciprocal wave propagation in a hollow image guide with a ferrite layer. S.W. Yun and T. Itoh H p222
Permittivity measurements using a frequency-tuned microwave TE_{01} cavity resonator. E. Ni and U. Stumper H p27
Propagation characteristics of rectangular corrugated waveguides. A.A.S. Obaid, T.S.M. Maclean and M. Razaz H p413
Rib waveguide curvature loss: the scalar problem. P.C. Kendall, P.N. Robson and J.E. Sitch J p140
Rigorous field theory analysis of quasiplanar waveguides. J. Bornemann H p1
Semiconductor waveguides: analysis of optical propagation in single rib structures and directional couplers. M.J. Robertson, S. Ritchie and P. Dayan J p336
Six port reflectometer for the 75–105 GHz band. L.D. Hill H p141
Theory of the grating coupler for a grounded-dielectric-slab-waveguide. W.S. Park and S.R. Seshadri H p149
Vector–*H* Finite element solution of GaAs/GaAlAs rib waveguides. B.M.A. Rahman and J.B. Davies J p349

WIND POWER

A statistical method for optimising wind power contribution in a diesel supplied network. A.J. Tsitsovits and L.L. Freris C p269

Book reviews

A basic guide to power electronics. A. Kloss A p262
Acoustic emission. J.R. Matthews (Ed.) A p146
Advanced solid-state technology for radar: J. Clarke (Ed.) F p67
Analysis and design of analog integrated circuits P.R. Gray and R.G. Meyer G p130
Basic instrumentation lecture notes and study guide—Vols. 1 and 2. R.L. Moore A p262
Bipolar and MOS analog integrated circuit design A.B. Grebene G p72
Convertor engineering: an introduction to operation and theory G. Moltgen B p298
Crystal oscillator circuits R.J. Matthys G p71
Custom-specific integrated circuits design and fabrication. S.L. Hurst G p287
Deep space telecommunications systems engineering J.H. Yuen F p132
Design of crystal and other harmonic oscillators B. Parzen and A. Ballato G p64
Design of testable logic circuits R.G. Bennetts G p112
Designing systems with microprocessors—a systematic approach M.D. Freedman and L.B. Evans E p185
Digital coding of waveforms—principles and applications to speech and video N.S. Jayant and P. Noll F p186
Digital control system analysis and design. C.L. Phillips and H.T. Nagle (Jun.) D p277
Digital image processing: a practical primer G.A. Baxes F p202
Digital processing of signals—theory and practice M. Bellanger F p202
Eddy currents in linear conducting media. J.A. Tegopoulos and E.E. Kriezis A p466
Electrical insulation. A. Bradwell A p75
Electronic circuit analysis: basic principles R.A. Coklasser, D.A. Neaman and C.F. Hawkins G p246
Electronic intelligence: the analysis of radar signals: R.W. Wiley F p67
Electronic speech synthesis G. Bristow F p127
Error control coding: fundamentals and applications S. Lin and D.J. Costello F p68
Essentials of solid-state electronics R.B. Faber I p236
Fiber optics devices and systems J p199
Fibre optics communications H.F. Taylor J p159
From compass to computer. W.A. Atherton A p128
Introduction to wave phenomena. Akira Hirose and Karl E. Lonngren A p284
Least-square estimation with applications to digital signal processing A.A. Giorgano and F.M. Hsu F p612
Local telecommunications J.M. Griffiths F p131
Logic designers handbook E.A. Parr E p185
Long wave optics: G.W. Chantry J p389
Measurement of optical fibers and devices: theory and experiments. G. Cancellieri and U. Ravaioli J p157
Medical imaging systems. A. Maccovski A p112
Microcomputer tools for communications engineering S.T. Li, J.W. Rockway, J.C. Logan and D.W.S. Tam F p504
Microprocessor based robots M.J. Robillard D p87
Microwave and optical ray geometry S. Cornbleet J p158
Microwave imaging with large antenna arrays. B.D. Steinberg H p57
Optical communication systems J. Gowar F p203
Optics and lasers: including fibers and integrated optics. 2nd revised edn J p199
Oxford surveys in information technology. P. Zorkoczy A p279
Power electronics and variable-speed drives B p115
Power semiconductor drives S.B. Dewar, G.R. Sleman and A. Straughen B p347
Power sources for electric vehicles: studies in electrical and electronic engineering: B.D. Nichol and D.A.J. Rand (Eds) B p346
Radar reflectivity of land and sea (2nd edn.) M.W. Long F p118
Radar system design and analysis S.A. Hovanessian F p118
Reliability and maintainability. D.P. Heyman and N.D. Singpurwalla (Eds.) A p121
Reliability evaluation of power systems. R. Billington and R.N. Allan C p55
Reliability of analogue electronic systems K.B. Klaasen G p111

Satellite microwave remote sensing T.D. Allan **F** p130
Signals and systems A.V. Oppenheim, A.S. Willsky and I.T. Young **F** p131
Superconducting rotating electrical machines J.R. Bumby **B** p299
The history of electric wires and cables. R.M. Black **A** p75
Theory and applications of linear differential equations—a systems approach in engineering R.M. Johnson **D** p279
Transmission electron microscopy of silicon VLSI circuits and structures. R.B. Marcus and T.T. Sheng **I** p236
Tutorials in modern communications V.B. Lawrence, J.L. LoCicero and L.B. Milstein **F** p98

Conference reports

4th IMA international conference on control theory M.J. Grimble **D** p24
6th symposium on information theory in the Benelux A.J. Vinck **F** p484
Applied signal processing and digital filtering—international symposium P.M. Grant **F** p490
Communications '84 (Telecommunications, radio and information technology) D.A. McFarlane **F** p125
Design for testability **A** p241
Design = quality. True or false? **A** p228
Discussion meeting on polymeric cables 25/44 kV and above. A. Ross **C** p98
HF communication systems and techniques M. Darnell **F** p326
IEE Colloquium on Communication systems for band III (174–225 MHz) R.C.V. Macario **F** p126
IEE Colloquium on Digital audio signals in studio centres D.C. Savage **F** p526
IEE Colloquium on Earth stations for the fixed satellite service P.F. Robinson and B. Claydon **F** p89
IEE Colloquium on Gate-turnoff thyristors F.J. Burgum **B** p345
IEE Colloquium on Improving industrial energy efficiency by electrical methods P.H. Johnson **B** p297
Instabilities and dynamics of lasers and nonlinear optical systems: K.A. Shore **J** p384
Joint IEE and Institute of Metal Finishing Colloquium on electrofinishing for metals and plastics. M. McCormick **B** p174
The management of innovation **A** p222
The technical review—engineering statements for investors **A** p481

Conference publications

252 Control 85 **D** p242
253 Photoelectronic imaging **J** p388
Advances in command, control and communication systems: theory and applications (IEE Conference Publication 247) **F** p625

, List of papers presented at the IEE's weekend meetings on the history of electrical engineering **A** p602